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REPORT OF LIQUID FUEL BOARD.

The navy department has made public the conclusions of the liquid fuel board of the navy, consisting of Commander John R. Edwards, Lieutenant Commander W. M. Parks and Lieutenant Commander F. H. Bailey, formed as a result of tests covering a period of twenty-eight months with coal and oil as a navy fuel. It is the opinion of the board that an intelligent fireroom force should find no trouble in burning oil in

TRAINLOAD OF LAUNCHES EN ROUTE TO THE WORLD'S FAIR.

[*From the Truscott Boat Mfg. Co., St. Joseph, Mich.*

the uniform manner, and for general purposes on shore high-pressure steam was found to be a better spraying medium than air. Regarding the question of burners the board says that: "As the war ship is designed to be operated at short notice under the severest forced draught conditions, the question will have to be considered whether it is not more advisable to fit air burners that would be found most efficient for the day of battle, rather than effect an installation of steam burners that are most desirable for general cruising."

The board declares that no fuel oil installation should be permitted for marine purposes which does not permit a return to coal within twenty-four hours in case of the failure of the oil supply. It says that with the use of oil the forcing of a marine boiler can be more readily accomplished than with the use of coal. The board is of opinion, however, that no attempts should be made to use oil as auxiliary or supplementary to coal. The evaporative efficiencies of crude and refined oil it finds is practically the same, no matter from what locality the oil may come. For marine work it says no crude oil should be used. In conclusion, the board in its report says:

"In view of the fact that 48 per cent of the world's output of crude petroleum is produced in the United States, and practically our entire yield is secured from fields which are in pipe line communication with important maritime and strategic ports, the board considers that a joint commission representing commercial, manufacturing, maritime and naval interests should be authorized by congress, whose province it would be to formulate rules and regulations that would provide for an economical efficient, enduring and safe fuel oil installation. Particularly for the development of our commercial interests in the Gulf of Mexico and on the Pacific coast should the work of such commission have an important influence in extending our prestige and power whether viewed from a commercial, maritime or naval standpoint."

The board regards the engineering or mechanical features of the liquid fuel problems as having been practically and satisfactorily solved. For manufacturing purposes, the financial and supply features of the fuel are the only hindrances to the use of crude petroleum as a standard fuel. For mercantile purposes, the commercial and transportation features of the problem are existing bars which limit the use of oil fuel for

merchant ships. For naval purposes there is the additional serious difficulty to be overcome of providing satisfactory and safe structural arrangement for carrying an adequate bunker supply. For a time the effort should be made to use oil fuel only for special purposes in particular localities.

Because of the international interest in these experiments, Secretary Moody has ordered that 5,000 copies of the report be printed for distribution.

REPORTS OF BRITISH SHIPPING COMPANIES.

The annual reports of the British shipping companies—practically all of which have now been published—reflect the extreme depression that existed in the shipping trade during 1903. In the Atlantic trade the only favorable feature was that emigration from Europe to this country was sensibly increased. South Africa trade during the greater part of the year, both in passenger and cargo, was well maintained, but owing to excessive competition and consequent disturbance in rates freight earnings were much reduced. The Indian trade was also good, so far as quantity was concerned, but rates were again extremely low, and the heavy fall in the silver exchange greatly interfered with the trade between India, China and Japan. Australian business marked a further decline, owing to the effects of the prolonged drouth, but it is to be hoped that the recovery of a certain measure of prosperity in the Australian colonies will tend to a favorable reaction so far as shipping interests are concerned.

The North Brazil trade is the only one in which an improvement can be recorded, but the West India trade has continued in a depressed condition, and rates of freights are reported to have been unremunerative.

The reports of the majority of the shipping companies which are made up annually to Dec. 31 reflect the adverse conditions referred to above. The following statement compiled by the London Economist shows the results of the operations of the leading companies for the year 1903, except the P. & O. Co., the accounts of which undertaking are made up to Sept. 30.

Names.	Gross profits. 1903.	Gross profits. 1902.	Depreciation 1903.	Depreciation 1902.
Booth	£130,138	£97,116	£45,474	£53,762
*Clan	.....	.....	.....	.....
Cunard	267,159	261,632	164,743	158,722
*Leyland	.....	.....	.....	.....
Orient	34,524	50,905	34,524	51,845
Pacific	197,674	263,025	175,577	169,013
P. & O.	828,546	848,345	320,347	600,000
Royal Mail Steam Packet	67,686	58,551	54,238	47,054
*Union Castle	.....	.....	.....	.....

Names.	To insurance fund 1903.	To insurance fund 1902.
Booth	£.....	£.....
*Clan	.....	.....
Cunard	30,302	24,686
*Leyland	.....	.....
Orient	.....	.....
Pacific	.....	.....
Royal Mail Steam Packet	12,043	Nil
P. & O.	.....	.....
*Union Castle	Nil	150,000

*Information not furnished.

The Booth company is the only one which shows any improvement. In the case of the Orient company the balance to the credit of revenue account, £34,524, was insufficient to provide the full depreciation for the year, and was carriel to reserve in terms of the articles of association. The P. & O. Co., it will be observed, carried nearly £280,000 more to depreciation account in 1902 than was so transferred in 1903.

The following table shows the manner in which the profits were disposed of, viz.:

Names.	Net profits. 1903.	Net profits. 1902.	Carried to reserve fund, etc. 1903.	Carried to reserve fund, etc. 1902.
Booth	£64,454	£18,135	£48,000	Nil
Clan	12,122	25,357	.....	....
Cunard	64,771	66,823	.....	....
Leyland	b269,500	b65,500	.....	....
Pacific	18,646	87,394	.....	....
P. & O.	508,500	248,345	250,000	Nil
Royal Mail	1,405	11,497	.....	....
Union Castle	160,571	463,483	d75,000	e210,000

Names	Dividends. 1903. Amount.	1903. %	Dividends. 1902 Amount.	1902 %
Booth	£16,500	a5½	£16,500	a5½
Clan	25,000	5	30,000	6
Cunard	64,000	4	64,000	4
Leyland	.....	..	.....	..
Pacific	c00,085	4	88,627	6
P. & O.	208,800	13	208,800	13
Royal Mail	.....	..	.....	..
Union Castle	70,920	5	85,104	f6

a Dividend on preference shares only. b Loss. c £30,000 transferred from dividend reserve fund. d Including £30,000 to repairs and renewal fund. e Including £95,000 to repairs and renewals fund. f Including one per cent bonus paid out of the insurance fund.

The Leyland Co., which forms one of the combined undertakings controlled by the International Mercantile Marine Co., reported a loss of no less than £269,500, after providing, we understand, £165,000 for depreciation. This loss was met by a transfer from the reserve fund, which has reduced the amount standing to the credit of that fund to £65,000. The bills payable and sundry creditors and loans amounted, on Dec. 31, 1903, to £824,464, so that the position of this company cannot be looked upon as satisfactory.

The Pacific Steam Navigation Co. was only able to maintain its dividend at 4 per cent by the transfer of £30,000 from the dividend reserve fund, while the Clan Line has reduced its carry-forward from £18,879 to £6,000; so that the company really earned only 2½ per cent, although a dividend of 5 per cent was paid.

Of the large companies, the P. & O. alone has been able to maintain its fine record, the figures being much about the same as last year, although the profits have been disposed of in a different way. For 1902 an extra sum of £263,576 was written off for depreciation, while for 1903 the sum of £250,000 was carried to reserve fund out of the profits.

The Union Castle company does not show its gross profits or the sum carried to depreciation account, but the net earnings or 1903 show a very large decrease as compared with 1902, when the profits were greatly augmented by the earnings from the transport services.

The tonnage of the fleets owned by the various companies at the date of the last report, and the amounts at which they are valued in the books, are shown in the following table, viz.:

Names.	Tonnage Completed.	Tonnage Building.	Book value of tonnage.	Average amount per ton.
Booth	70,696	12,200	†£818,436	*£9.9
Clan Line	195,000	.....	1,945,000	9.97
Cunard	139,203	52,500	1,505,140	10.8
Leyland	256,705	24,000	3,048,503	11.9
Orient	39,972	.....	673,503	16.8
Pacific	150,832	.....	1,819,536	12
P. & O.	340,933	10,500	2,453,363	7.16
Royal Mail	87,355	21,096	†1,399,131	*13
Union Castle	293,889	8,500	†3,724,078	*12.6

* Including steamships building. † Including amounts paid on account of new steamships building.

In the case of some of the companies the value of the fleets, as shown in the balance sheets, includes sums paid on account of new steamers, and where there is a large amount of new

tonnage building, as in the case of the Royal Mail Steam Packet Co., the average amount per ton will naturally be considerably higher when the whole of the payments have been completed.

The tonnage of the new steamships now building for the Cunard Co. amounts to upwards of 100,000 tons, the orders for the two new turbine vessels required under the terms of the agreement with the government having been placed about a month ago.

It will be observed that the P. & O. Co. has written down the book value of its fleet to an average of £7 3s per ton—a very moderate valuation, considering the high quality of the vessels owned.

PLEA FOR DISCRIMINATING DUTIES.

Editor Marine Review:—Your very able editorials championing so ably the cause of our dying deep water merchant marine, I am sure is of great interest to me and must be to every one else. The old saying, "That what the people wants is right," is true, and equally true is it, "That what the people wants and wants badly, they will get," so the more this very vitally important question is laid before the public, and the more the subject is handled by the voice of the people—the Press—the sooner will an expedient be found that will put our merchant marine in front of all competitors. In your issue of March 10 is to be noted opinions on this subject, from the pens of some of our foremost men of the day, and while we may differ somewhat on the ways and means from some of the opinions expressed, still we will agree that this subject is the most important before the American people to-day.

Now as to the cause of the decline of our merchant marine: From all appearances it must be the trade agreements and conventions, that we have made in late years with foreign nations. It would then seem that the work of the committee, appointed by the last congress to look into this question was clearly lined out in advance. They must, by their investigations, prove to the American people whether these trade agreements and conventions are and have been of benefit to us or not. If they are clearly shown to be of benefit to us then we have no cause to howl for a larger merchant marine, and if not of benefit to us, it is equally clear that they must be abrogated.

During March a statement appeared in one of our large daily papers that during the past three months fifteen railroads had discharged 21,000 employes, and we read of more men being laid off every day, both by railroads and other large manufacturing concerns. Surely this is an effective answer to the arguments of the advocates for large subsidies, for have not these railroad workers just as much right to ask of congress to pass laws to the effect that we pay the railroad some bounty that they may retain their positions, as have the Brotherhood of Boiler-Makers and Iron Ship-Builders. This then disposes of the argument that the American people must go down in their pockets and pay capitalists owning floating property the difference between the cost of operating and building American and foreign ships.

In looking back over the history of American shipping we see that in 1789 we were carrying 17 per cent of our own imports and 30 per cent of our exports in American bottoms, and in 1794, 91 per cent of our imports and 86 per cent of our exports were carried in American bottoms. Just think of this immense change effected in the space of only four years, and how was this remarkable change effected? We are told that one of the first acts of congress was to establish a tonnage tax of 6 cents on home vessels and 50 cents on foreign vessels entering our port, and further to give a rebate of 10 per cent off tariff duties on goods imported in American vessels. This flattering condition of things went on and our shipping flourished with unabated vigor, only temporarily checked by the war of 1812, reaching the high water mark in the year of 1825, when American bottoms carried 95 per cent of our imports and 89 per cent of our exports. Now the question arises, why do not the same conditions exist to-day? This discriminating duty still stands on the statute books of the United States in full force. We are, therefore, in a far better position to allow this discriminating duty now than formerly, and why is it that our statesmen will not take the muzzle off of it.

Why should we not unite and urge the coming congress to do this. The old tried plan is a good one, as has been proven, that the retaliation of foreign powers, as directed against our shipping, did not have any perceptible effect on the onward march in ship building has clearly been proven.

Protection has done wonders for our nation, and will keep on doing so just as long as we handle it rightly.

Yours truly,

VICTOR JOHNSON.

Clairton, Pa., June 18.

SATISFACTORY SPEED LAUNCH.

Mr. M. N. McLellan of New York city has had built for him by the White Craft & Power Co., Port Richmond, Staten Island, a speedboat 32 ft. over all by 5 ft. 10 in. beam. She was constructed from the builders' own design and is equipped with a 16-24 H. P. Truscott 4-cycle high speed marine motor. A speed of 12½ miles per hour was developed on the day of launching without any preliminary "tuning up" of the motor, which ran at a speed of 1,140 revolutions per minute. It is expected, however, that her speed will be greatly accelerated by increasing the pitch of her propeller, thereby decreasing the revolutions of the engine.

While being built with a special view to speed she is by no means of frail construction, being planked with 5/8-in. white cedar, copper fastened to oak ribs of sufficient strength to guarantee seaworthiness. That she is a thorough rough weather boat was evidenced by the fact of her crossing New York bay during a heavy squall with eleven people aboard, causing them no discomfort whatever, other than the wetting they received from spray and rain.

Her engine is placed amidship, aft of which is a large cockpit with a seating capacity of nine persons. The steering wheel is located in a cockpit forward of the engine space, there being room therein for two persons besides the helmsman. Her interior finish is of mahogany as is also her top strakes. The decks are of white pine making an artistic contrast of colors. She is to be equipped with a standing top and storm curtains.

FUTURE OF THE IRON INDUSTRY.

Charles M. Schwab is thus quoted in a New York interview: "I believe that the future development of the steel and iron industry in the United States will surpass all expectations. There is no other country in the world that possesses the natural resources of the United States or is in a position to manufacture steel and iron as economically as we can. The history of the development of the steel and iron industry in this country has been a most remarkable one, but I firmly believe that the future development of this industry will surpass anything that has been accomplished in the past."

In the British admiralty court, London, the owners, master and crew of the German steamer, Excelsior, were awarded $20,000 for salvage services rendered to the Allan liner, Ontarian, which vessel lost her propeller while on a voyage from Portland, Me., to Glasgow, in April. The value of the salvage vessel was stated at $303,250, and the Excelsior at $304,655. The distance towed was about 900 miles and the time occupied was five days.

SEEN AND HEARD ON THE LOOKOUT.

Though for years the insignificance of the American merchant marine has been commented on, all the steps taken thus far to further its development were hardly of such a nature that one could do more than expect gratifying results at some unpleasantly indefinite day in the future. Themistocles labored to make Greece commercially supreme; the one maritime power in all the world; and a modern Themistocles is urgently needed in this part of the world. Several of them —recently introduced to your readers collectively as the "Merchant Marine Commission"—were welcomed with contagious enthusiasm. Among other things, this commission was instructed to determine what changes should be made in existing laws relating to the treatment, comfort and safety of seamen, in order to make the calling more attractive to the American youth. It is a well known fact that on the numerous coasting vessels comparatively few American-born seamen can be found. One, though certainly not the principal reason, for this scarcity of natives in American forecastles may be attributed to the fact that opportunities for advancement in pursuits on land are, if anything, increasing.

But the lack of a number of native seamen commensurate even with the size of America's present merchant fleet is due to the government's failure to aid in the manufacture of the accomplished mariner from the so abundant crude material.

By way of illustrating the above contention, let it be supposed that one of these multi-masted, typical American schooners, irreverently referred to as a "picket fence," is ready to go to sea. The captain is in some shipping office engaging a crew, or, in other words, carefully investigating the right of each applicant for a berth to his claim of being an able seaman. Neither the captain nor any of his conferèes in command of similar monotonously sparred craft has any intention to give instructions in seamanship. These American schooners carry exceptionally able crews, but the majority of the latter's members had to learn their calling under foreign flags. Sailors, like poets, must be made, for no one is born with a knowledge of steering, reefing and splicing. Growing boys, consuming fully as much food as men, besides not being during their first year on shipboard of much material assistance, the American captain hires only A. B.'s, having precedents for his supposition that Sweden, for instance, will see to it that the supply equals the demand. Thus, no American boys on American coasters. Of course the captains cannot be blamed—a trained horse is a more desirable possession than an "unbusted" bronco.

Having mentioned Sweden as being the source from which American seamen flow, it should now first be granted that the abundance of Swedish nautical experts is in some measure due to the few opportunities in that country to succeed on land. In fact, the Swedish youth often has only the choice between privation and the deep sea; and the youngster who expresses a preference for a life on the bounding wave to a home on the rocky farm can speedily have his wish gratified—foreign captains being compelled to ship one or more boys, according to the tonnage of their craft. Thus it is seen that "apprentices" are deemed a necessary adjunct to the completion of a British deep-waterman's crew; a Hamburg craft carries a few *leicht matrosen* and a *junge*, while the law declares a French forecastle insufficiently tenanted should a *mousse* fail to turn up at the time of sailing. And all such embryo mariners, in whatever idiom of speech, they were first instructed in the niceties of the seaman's calling, may ultimately blossom into American mariners—for in America the manufacture of sailors is a veritable infant industry.

In the spring a sailor's fancy strongly turns to thoughts of yachts. Before the advent of extremely cold weather numerous sailors arrange for a trip to the tropics—a procedure known in marine circles as "cheating the winter," and their return is an eloquent hint to yacht owners that orders to fit out are anxiously awaited. In basins and slips where these craft have passed their period of enforced idleness, less activity reigns than at this time of the year in former seasons. The attractions at the St. Louis Fair are said to have caused the expected removal of the yachts' winter covering to be postponed, and sailortown is consequently overrun by translated denizens of ships' forecastles, eager to don the nautical livery of some plutocrat. However, some yachts are in commission; newly painted, varnished and holystoned, a pleasure to the eye and a joy for a few months. A little later in the season the urgent "call of the wild" is predicted to reach the ears of those now tarrying in St. Louis, and orders to hurry the fitting-out process are daily expected. The fashion in steam yachts is similar to that of last year; white is the favorite color, the clipper bow remains strictly *de rigueur,* and with the exception of the number of masts carried, the larger modern craft of this kind can only be distinguished one from the other by experts in such matters. But there is as yet no fashion in gasoline launches, and the owners seem to hold the most divergent views as to what constitutes an up-to-date craft propelled by a motor of the explosive type. There are boats that carry a motor amidships; some where the motor has been placed as far forward as possible, many launches have the machinery in close proximity to the rudder, and one prospective owner approached a builder with a request to be informed as to the price of a "triple-expansion-gasoline-turbine" motor. For the benefit of your readers I'll interview this embryo launch-owner and hear his opinion as to the most advantageous place for a "turbine motor." A story has been told of a benevolent gentleman buying wheelbarrows for some natives who were carrying stones on their heads. The natives certainly appreciated this kindness, and each filed past with a stone-laden wheelbarrow on his dome of thought. In this connection I would mention reading in the prospectus of a motor manufacturer that one of the motor's advantages over a steam engine was that the ungraceful smokestack could be dispensed with. And recently a large gasoline boat was launched that had been fitted with an exceptionally conspicuous smokestack—suggestive of a wheelbarrow on the negro's head. Nothing like being in style.

Auxiliary sailboats are deservedly popular this year. The owner of one of these boats invited some friends for a short cruise, and the sail down the bay was greatly enjoyed. Before sundown, however, the wind died out, and when the guests had already made up their minds that the night would have to be passed on the rolling deep, the removal of a few boards revealed the presence of an unobtrusive motor, patiently awaiting for just such an occasion to demonstrate the utility of its kind.

The launching of a lifeboat equipped with a motor would cause one to believe that rowing may ultimately become a lost art, or only spasmodically indulged in by summer resort frequenters for chest expansion—see oar maker's advertisement. According to Macaulay: "A fondness for practical joking in a mature man is a sign of a bad heart"—but as none of us can take it for granted that numerous lovers of nautical diversions are actually bad-hearted, let us conclude that all those persons who were guilty of violently rocking the boat, or of too securely tying the mainsheet, were uncompromisingly immature.

Preliminary steps have now been taken for the organization of a company that is intended to build a ship capable of covering the distance between New York and Southampton in three days. A few years ago there were rumors that in the near future a veritable ocean greyhound would carry passengers to England in two days; but at that time the claim

of the possibility to shoot passengers across the western ocean was placed in the category of the project of a company that tried to raise funds to pipe milk from the dairy farms of Utica to New York city. But, as Edgar Saltus says: "Everything is possible." and Mr. Painton, the inventor of the multiple electric propeller, is confidently predicting that in the near future an ocean steamer, running at the rate of forty miles per hour, will break all existing ocean speed records. And incidentally, as regards breaking anything, it is to be hoped that said steamer may confine herself to records. Since the advent of the turbine engine, steamers with three propellers are no longer unusual, but Mr. Painton intends to have a series of propellers ranged along his vessel's sides, in addition to those placed in the good old tramp steamer style. While steam power can only revolve a shaft 150 times a minute, it is claimed that by means of electric reversible motors, each of these numerous shafts will attain a velocity of 1,500 revolutions. Another advantage is that the absence of the long, unwieldy tunnel shaft must tend to greatly reduce the vibration that is now so unpleasanly associated with rapid ocean traveling. A turbine engine will be installed to generate the electricity for the twirling of the multitudinous propellers. Those who believe in the truth of the saying, "figures cannot lie, may be interested to hear that, according to the inventor, the coal bill will be $9,000 less each trip than that presented to the companies owning the present fastest steamships.

And just at the time when wireless telegraphy made the daily ocean newspaper possible, someone invents a mode of propulsion for steamers that must ultimately obviate any need of such a publication.

Curb those strenuous inventors.

The captain of an English steamer, lately returned from the other side of the globe, gave proof conclusive that the Japanese government has seen the expediency of preparing for war while peace reigns. It appears that among the freight of the steamer alluded to had been 200 diving outfits destined for the use of the Japanese navy. Said diving suits were manufactured by the London firm which has contracts to furnish the British navy with its product, and along with the Japanese shipment went English teachers of the dangerous art of diving à la mode. It is perhaps not generally known that every up-to-date navy now has a school in which divers are trained to make temporary repairs to a battleship that has been injured below the water line. The school room where lessons in sub-aqueous ship repairing are given is simply a large tank filled with water, and having small glass panes in its sides through which the teacher can observe, and direct his amphibious pupil. And not only is the embryo diver taught the niceties of his future calling, but the attending seamen in charge of the air pump, signal lines, etc., are carefully instructed in the handling of the paraphernalia which alone enables the diver to work outside of his natural element. Many young men think they are called, but few are chosen for the position of diver for the navy. Boilermakers or blacksmiths are preferred in cases where the task required of them is the patching of a damaged iron hull; but, whatever the nature of their calling previous to their request for lessons in diving only physically sound applicants are accepted by the strict medical examiners.

The manufacture of more potent engines of destruction keeps pace with the invention of surer methods for safeguarding life and property. Anyone having ever closely examined a modern battleship is forced to doubt the possibility that anything thrown from a gun could pierce her hull. And this is without taking into account her watertight compartments, false bottom, and other devices for counteracting a strenuous enemy's efforts. A few Russian ships are reported seriously damaged by Japanese torpedoes, and facilities for making efficient repairs are apparently lacking. The ability of all the Japanese men-of-war to keep afloat after an encounter may in some cases, perhaps, be attributed to the work of the carefully trained divers for whom the 200 suits were last year sent to Nagasaki. In war, as Hamlet said of death, "The readiness is all."

Slowly moving among the numerous speedy craft that thronged the East River and appearing altogether out of place amidst so many exponents of twentieth century rapid transit, a fleet of canal boats, escorted by the inevitable, self-assertive tugs, reminded one of Voltaire's saying, *"Les extremes se touchent."* The canal boats safely delivered their load of grain, salt and lumber, after a five months' voyage from ports along the canal. However, *Honi soit qui mal y pense,* or, in other words, the mules must not be held responsible for the failure to establish a new speed record on the towpath. And now when at last the ice that for so many months effectively stopped the navigation of these floating homesteads has disappeared a strike of lake captains and pilots against transportation companies tied up the canal boats again. But the canal is open, of course, and after the long winter spent on the farm all those in canal boat circles, with the exception, probably, of the mules, are impatiently waiting the commencement of a season of activity. While the majority of the recent arrivals carry mules as their means of locomotion, and the so-called "electric mule" not being as yet in working order, a few canal boats are provided with steam power—boiler and engine being placed as far aft as possible. On board of one of these steam canal boats the surface condenser had to do its allotted task without the assistance of a circulation pump. The engineer explained that the suction caused by the revolving propeller was sufficiently strong to circulate the necessary water through the tubes. When reversing the engine, or backing the boat, pressure takes the place of suction. To quote the engineer, "It goes pretty good mostly;" and if this engineer is satisfied, not only with the working of his engine, but also with the manner in which he expresses this satisfaction, no complaints are expected from other quarters. Life on board canal boats is decidedly homelike, and when meeting the crew—this time the mules are not intended to be included—one gains the impression of having discovered the missing links between the deep-water sailor and the farmhand.

F. H.

The Navy Pocket Book edited by Sir W. Laird Clowes and published by Thacker & Co., 2 Creek lane, E. C., London, England, has just reached its ninth edition. It contains a complete list of every battleship, cruiser, gunboat, torpedo and destroyer boat, harbor, hospital, training and subsidiary vessel, giving details of displacement, armament, armour, engines and capacity. There is also incorporated a general plan of the leading naval vessels. A notable chapter in the present volume is that devoted to the history of the submarine by Mr. Allan H. Burgoyne in which full particulars of the submarine fleets of the world are also given.

The five-masted schooner now building at the yard of Percy & Small, Bath, Me., will be named Grace K. Martin and will be launched next month. Her dimensions are: Length 280 ft., beam 48 ft., breadth 29 ft.. and it is estimated that she will have a carrying capacity of 5,000 tons.

Mr. Charles M. Schwab, who has just returned from Europe, in speaking of the United States Ship Building Co., said that he would take an active part in its upbuilding, but that the subject of the presidency of the company rested with the board of directors.

POPULARITY OF THE SCHOONER.

The schooner-rigged vessel is now the distinctive type of sail carrier in the coasting trade. Schooners of great burden, however, are comparatively a recent product on the coast. Up to the time of the civil war a schooner of from 200 to 300 tons was considered large on the coast, though the first three-master on the great lakes was built as early as 1850. It was thirty years later that the first four-master was built on the coast and vessels of schooner rig began to run up to 1,200 and 1,500 tons in size. The first five-master afloat that kept the seas of her own power was the schooner Governor Ames, built in 1889 at Waldboro, Me., and up to three years ago she was the only schooner of her class. In comparison with the full-rigged sailing ship there is no question as to the superiority of the multi-masted schooner. The cost of construction is less in the case of the schooner; she carries less than half the crew required by the ship; she carries an enormous spread of canvas and can outpoint and outfoot any square-rigger afloat; and, finally, she can carry a great cargo. As to the standing of these schooners when compared with the ordinary type of steam cargo tramp, there is a necessity of more careful investigation. The average cost of construction per ton carrying capacity of four schooners—four and five-masters—from which data have been compiled, has been $25. The cost of two steel freight steamships built in American shipyards in 1900 with a capacity for 5,300 tons of cargo was $55 per ton carrying capacity. The cost of running the schooners, as derived from statements rendered by the agents over a series of voyages covering a year's time, was $7 per ton carrying capacity. The cost of operating the steamers was greater than this owing to the larger crew carried, higher wages necessarily paid, cost of coal for consumption in their engines and greater charge for depreciation, insurance and interest. It amounted to $30.50 per ton carrying capacity.

The advantage a cargo steamer has over the multi-masted schooner of the same capacity is in the increased number of trips it can make in a given time. The actual figures show that the tramp steamer can make about three times as many trips in a year as a five-masted schooner engaged in steady business. About one-half the time the schooner will equal the steamer's record in spite of the latter's quicker dispatch, while the other half of the year its voyages will be twice as long. On the year's business about twice as much business is handled by the steamer as by the schooner. The ordinary coasting cargo tramp steamer will make thirty-six trips in a certain trade in a year. She can carry 2,500 tons of coal per trip at say 65 cents a ton, giving her gross receipts of $57,200 in the year. She is afloat on an average 200 days in the year, burning 20 tons of coal a day, at a cost of $2.50 a ton, or $10,000 for the year. She carries a crew of twenty-four, whose wages amount to $1,200 a month or for $14,400 for the year. It costs $12 a day to feed this crew or $4,400 for the year. There are incidental expenses of $600 a month for paint, repairs on deck and in engine room, a total of $7,200 for the year. The stevedoring will amount to $6,300 more. Port charges, insurance, commissions, and agent will cost $5,000 a year additional. This adds up to $46,300 and there will easily be $3,000 more in miscellaneous expense, making a round total of $50,000 operating expenses, thus leaving a profit of $7,300 to pay insurance, interest and depreciation and dividends.

A five-masted schooner of 2,258 gross tons will make thirteen trips where the steamer is making thirty-six. She will carry 3,600 tons of coal at 60 cents, earning $28,080. Her crew will consist of twelve men, whose wages will amount to $6,000 a year. It will cost only $1,500 to feed them. Incidental expenses all summed up may amount to $4,000, this including commissions, agents, insurance, repairs, port charges, etc. The stevedoring will amount to $5,000. This amounts in total to $16,500, which amount may be increased by miscellaneous expenditures to $18,000, leaving a profit of $7,740 to pay interest, insurance, depreciation and dividends.

Actual figures of voyages show gross earnings for a five-masted schooner carrying 3,600 tons of coal of $11.11 per ton, while the actual expenses were $6.66 per ton, leaving a profit of $4.45 per ton on the year's business.

A steamship of equal cargo capacity would earn on thirty-six voyages at 60 cents $21.60 a ton, while the expenses would be about $16 a ton, leaving a profit of $5.60 per ton on the year's business. The difference in favor of the steamship would be offset by the fact her original cost is $55 per ton against $27 per ton for the schooner, the advantage of the latter thus being $26.40 per ton carrying capacity.

COMPARISON OF DOCK CHANGES.

Liverpool, June 20.—In connection with the new Hungarian-American service, inaugurated by the new Cunard liner Slavonia, the Cunard Bulletin issued on board the royal mail steamer Campania on her last homeward voyage contains the following: "Although it is but recently that the Cunard Line has opened this new Hungarian-American route, it should not be forgotten that Cunard ships have been well known in the Mediterranean ports for fully half a century. As long ago as 1853 the company built six steamers to run regularly between England and the Mediterranean; vessels being afterwards added to the fleet as the traffic required. It is also an interesting fact in relation to this new Mediterranean-Transatlantic route, that at the time mentioned (1853) no steamship line now in existence had commenced to run steamers between Europe and the United States except the Cunard, which line already had for thirteen years prior to that date maintained a regular service bteween Liverpool and the States. For many years the company carried on an extensive Liverpool-Mediterranean passenger trade, conveying thousands upon thousands of passengers to and from Italian ports, the Adriatic, the Levant, the Bosphorus and the Black Sea. In this extension of the company's Mediterranean service to New York, the same careful discipline (safety is always the company's first consideration), and the same well known solicitude for the comfort of the passengers as obtains in the North Atlantic fleet, will be maintained."

The consular report issued by the Department of Commerce and Labor at Washington giving a comparison of the dock changes at certain European ports and at New York, has been read with much interest here. Liverpool has long had the reputation of being a dear port, but it is news to many that the port charges are more than double those of Antwerp, Rotterdam, Stockholm and Copenhagen, while those of Hamburg, New York and Havre are nearly one-half less. For example the charges for dealing with a steamer of 1,200 tons net with 400 tons of cargo, would be $1,075.43 at Liverpool, while the port charges at New York would be only $548.84. This comparison is published at an opportune time, when the Mersey Docks and Harbor Board are seeking for parliamentary powers to alter their basis of charging dues which if anything will end in additional burdens being placed on shipping, especially high speed vessels. The consular report further drives home the fact, which has only been imperfectly understood, that Liverpool is an expensive port and likely to retain that unenviable reputation in view of the heavy capital expenditure recently incurred, and already sanctioned. Perhaps it may have its effect upon the future policy of the Mersey Docks Board.

The Susquehanna Iron Co.'s big plant at Buffalo is expected to be put in operation in thirty days.

FREIGHT SITUATION ON THE LAKES.

As far as the active business of the great lakes is concerned, as evidenced by the conditions of the past week, it really would not have mattered very much if the strike of the masters had continued one month longer. Ore has been moving quite freely from the mines to the docks, but not in sufficient quantity to supply all vessels and cargoes have been relatively scarce. Two leading shippers have contracted for ore on the basis of 70 cents from the head of the lakes, 65 cents from Marquette and 55 cents from Escanaba, though the leading vesselmen are reluctant to accept these figures and it is not known with whom the contracts have been made. Rather than accept 70 cents vesselmen are inclined to operate their vessels wild, believing that better rates will be obtained later on. They would all be quite willing to close for the season at 80 cents and one leading shipper has announced his willingness, provided he is supported, of establishing the rate at 75 cents from the head of the lakes, 70 cents from Marquette and 65 cents from Escanaba. The United States Steel Corporation has made no effort to charter any tonnage as yet and this has contributed greatly to the uncertainty of the situation. The grain movement is absolutely dead and is cutting no figure whatever. Reliable authorities estimate that the coal movement will be 15 per cent less than it was last year, but this is counterbalanced by a 28 per cent reduction in the length of the active season of operation. The wild rates on coal during the week fell to the contract basis, which is 35 cents to the head of the lakes and 45 cents to Lake Michigan, a reduction of 5 cents over last year's charges. All in all, it looks like quite a lean year for the vessel owner.

SAFETY OF LAKE PASSENGER BOATS.

The appalling disaster of the steamer General Slocum in New York harbor profoundly effected the passenger boat service of the entire country in the sense that it caused all of them to look closely to their equipment. This scrutiny was, of course, as well exercised on the great lakes, where the volume of passenger trade is constantly growing. The vessels were found to be in first-class condition with every possible safeguard taken for their safety. Capt. James Stone, supervising inspector of steamboats, caused a searching inspection to be made of the passenger boats operating out of Cleveland. This work was so well appreciated by Mr. T. F. Newman, general manager of the Cleveland & Buffalo Transit Co., that he sent him the following letter:

"This is to assure you of our full appreciation of your recent call and the good counsel received from you at that time together with the searching inspection given our steamers. The rigid enforcement of the inspection laws by yourself and the local inspectors both at Cleveland and Buffalo is commendable. It is the aim of this company to have our vessels equipped with the best known devices, and our crews, consisting of over 100 men on each vessel, under such discipline as to eliminate to the greatest possible extent disasters of all kinds and to render the most effective service if occasion requires. In this connection, and since your call upon us, we have inaugurated a weekly system of inspection of our steamers, to be held jointly by the chief officers of the ship, their duty being to inspect fire service, life saving apparatus, sanitary condition of the ship and discipline of the crew, making full report to me of each inspection. This in addition to the weekly fire and boat drills and daily inspection on the part of the officers as to their respective departments will, I believe, have the effect of keeping the officers and crew alert as to their duties and the equipment of the ship in first-class condition.

"We solicit frequent inspection of our vessels by your department, and will be glad of any and all suggestions which will tend to bring our service for the protection of life and property to the highest possible standard."

Capt. Stone replied to Mr. Newman as follows:

"Yours of the 25th of June at hand. It is indeed a source of great satisfaction to the branch of steamboat inspection service having jurisdiction covering the route of your steamers City of Buffalo and City of Erie plying between Cleveland and Buffalo, to be assured of your most valuable co-operation with the inspectors at Cleveland and Buffalo in all things pertaining to the safety of life, while under the careful protection of the management re-enforced by an efficient set of officers and crews, and most confidently express my congratulation to the traveling public that an accident of any magnitude can scarcely occur under such discipline and vigilance as we are assured is maintained on your steamers. I cannot speak too highly of the condition of your steamers in every detail pertaining to the safety and comfort of passengers and crew."

WORK AT THE IRON MINES.

Duluth, June 29.—The pressure relieved, ore traffic sprung into full tide with a wonderful jump. Ships arrived at upper lake docks in such numbers that it was an impossibility to care for them all, the roads put on summer schedules of trains so that in a few days they had their service more than doubled, and at mines steam shovels and stockpiles were immediately called into operation day and night. But even this speed did not seem to satisfy shippers, and there has been some sharp correspondence between them and railway managers, who, while they will be able to move with ease all ore scheduled for the season, cannot get it all to docks in a week, as some of the shippers seem to suppose. Head of the lake roads have more trains in service than any other lines. The Duluth & Iron Range has now twenty-six ore train crews in commission and is delivering to dock at the rate of from 30,000 to 35,000 tons daily; the Duluth, Missabe & Northern has twenty-three trains at work and is delivering about as much and shipping up to 50,000 tons a day, and the Great Northern has a smaller number. As it serves independent mines the latter road is not getting ore quite as fast as the two United States Steel lines. Aside from Mahoning and Stevenson mines there are few on the line of the Great Northern that have been doing much until this week. So slow have been these independent mines that some ships have been here a week or more awaiting cargoes from them. Mahoning and Stevenson are shipping very heavily, though there is the same old howl from the latter as to car shortage. On old ranges stockpiles are melting down, but frost is already being encountered in the interior of the piles. The daily hoists have increased, and boats are taking as much ore as can be moved to docks. At Ishpeming four steam shovels are working in stocks, and at Negaunee there are two. The larger mines at Ironwood and Bessemer, at Iron Mountain, Norway and Iron River are shipping both from stocks and from their hoists.

DULUTH DREDGING NOTES.

Duluth, June 29.—One of the Pryor dredges, properly outfitted with scows and tugs, has gone from Houghton to the Sault, where it will be engaged in the new Haylake channel work for several years.

A dredge and outfit belonging to the Lake Superior Wrecking and Contracting Co. has gone from Duluth to Grand Marais, where it has a short season's work.

Hugo & Tim's machinery outfit has been taken from Duluth to Sand Beach, Lake Michigan, where that firm is putting in the harbor of refuge.

The steamer Sirius, brought to the lakes from Sweden by the Great Lakes and St. Lawrence River Transportation Co., was drydocked June 24. The Sirius grounded in the Welland canal on her first trip and badly damaged her bottom and starboard side.

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The members of the Merchant Marine Commission now touring the country for the purpose of making a general inquiry into the state of American shipping in the foreign trade, will probably conclude that the meetings held in Cleveland could not be surpassed in point of interest and in weight and value of the testimony submitted. The commission was most hospitably received and was favored with testimony from men whose combined interests very completely represented the collective industries of the great lakes. Probably at no time has the commission met with so powerful a body of men. Senators Gallinger and Penrose at the conclusion of the hearing declared that the Cleveland meeting was a revelation to them. The utmost broadmindedness was displayed and while all the testimony submitted was by no means favorable it was all advanced in good part.

The testimony had the merit of real value. It was not academic. It was not testimony which had been acquired by the speakers as a mental effort, but rather evidence which had been absorbed by them in the daily transaction of their business. The testimony was the relation of personal experience—the human document, as it were. For instance, Mr. F. F. Prentiss spoke from personal knowledge of the South American market. His business carries him there and he knows what the obstacles are in endeavoring to promote trade in that portion of our continent by reason of the lack of transportation. There is no line running from any United States port either to the east or west coasts of South America. The wants of this stupendous southern country approximate $800,000,000 annually and not a penny's worth of it can be sent directly there from the United States. It must first go to Britain. On the other hand whatever orders come from South America to be filled must first be dispatched to Europe before they can be transferred to the United States. This is a frightful handicap and one which effectually cuts off the American manufacturer from the great South American field. Mr. Prentiss' testimony being personal and beyond dispute had great weight with the commission.

Vital also was the testimony of Mr. J. C. Wallace, vice president and general manager of the American Ship Building Co. It is doubtful if the commission has been favored with testimony so blunt, so direct and so crushing. There was nothing evasive about him. He went right into what he considered to be the very heart of the subject and declared that the United States Steel Corporation had sold steel plates to the firm of Harland & Wolff at Belfast, Ireland, for $24, whereas this same steel bought in this country cost $32 at Pittsburg. This steel delivered at tidewater cost the firm of Harland & Wolff $22, and in a steamer consuming 5,000 tons of steel, the differential therefore in favor of this Irish firm which builds boats for the International Mercantile Marine Co. directly in competition with American ship builders would be $50,000 on this single item. Mr. Wallace added that on the great lakes steel represented 40 per cent of the total cost of a ship. Senator Gallinger was profoundly impressed with this testimony and took occasion to say that if it were true it was a great outrage and that measures should be taken to remedy it.

Capt. A. B. Wolvin of the Great Lakes & St. Lawrence Transportation Co., which is engaged in the great trade on the great lakes in competition with Canadian vessels presented a series of figures showing what it cost to operate the steamers of his own fleet under different flags. The majority of them fly the American flag, but during the present year the company chartered two foreign ships and found to their surprise that they were saving 40 per cent in operating expenses by doing so—that is, the sum for which the two steamers were chartered worked out to a figure 40 per cent less than it cost to operate one of the steamers of equal tonnage flying the American flag.

It was reserved for Mr. Harry Coulby, president and general manager of the Pittsburg Steamship Co. to make the most impressive speech of all to the commission. He spoke with an ease that astonished everyone and with extraordinary broadness. He looked upon it with the largeness of vision of one who surveys the whole continent and declared it to be a transportation problem simply. He thought the transporta-

tion leaders of the country should be invited to settle it and that if the applied business sense of the country was put upon the problem it would be solved much sooner than anyone anticipated. America is after the enlargement of its markets but in order to sell stuff to the foreigner one must first take it to him. If there is any difference in the cost of operating vessels on the high seas under the American flag the nation should make the difference up since it is responsible for it. Nor did he consider the question optional of settlement. It is mandatory. If it is not done now it will have to be done later for commerce will simply backwater and compel a solution of it.

Other testimony was submitted equally significant and equally pertinent. It was testimony the weight of which could not be shifted because it was based upon actual experience, and undoubtedly it will have much to do in aiding the commission in reaching its conclusions.

CHICAGO GRAIN REPORT.

Chicago, June 29.—The grain shipping conditions practically under a continuation of conditions as accounted in previous report. Vessels have held in steady supply though without any special pressure and some few of the light clearances resulted in preference to acceptance of the low going freight basis. Rates have thus held steady for regular cargo lots at ¾c oats and ⅞c corn to Lake Erie ports, with occasional booking of 1c corn in accord with general character of cargo. To Port Huron and Bay points slow responses at ⅞c corn. Via all water routing to Montreal, for line and outside carriers, 3¾c corn asked.

Some suggestion of betterment is to be noted in the near expiration (June 30) of lake-and-rail rate basis adopted heretofore by all rail routes on package freight. The line steamers, through this composition, having had to deal steadily in the grain movement. The proposed reduction from 3¾c corn to 3c per bushel at and east of Buffalo, for New York and export, effective July 1, is already stimulating an improved Lake Erie shipping inquiry. On the new terms the through rate laid down at New York figures about 3⅞c to 4c corn with the difference in favor of 3¾c all water Montreal corn offset partly by insurance. In the following statement of lake and rail shipment there was via all rail some 165,000 wheat, 345,000 corn and 55,000 oats. The rail grain rates, however, are not on a competitive basis with lake routing and their quota as mentioned probably comes about through the general movement of small parcel lots for eastern interior points.

Receipts of grain at latest report:

	This week.	Last week.	Same week last year.
Wheat	169,770	208,600	193,285
Corn	2,545,190	2,593,474	2,999,600
Oats	966,564	861,912	2,123,300
	3,681,524	3,663,986	5,316,185

Lake and rail shipments:

	This week.	Last week.	Same week this year.
Wheat	275,497	263,735	593,948
Corn	1,991,566	2,244,407	2,549,288
Oats	624,183	671,184	1,538,012
	2,891,246	3,179,326	4,681,248

Shipments since Jan. 1, 1904:

		Same time last year.
Wheat	6,600,285	10,325,310
Corn	28,833,711	38,106,133
Oats	23,034,717	32,801,430
Rye	770,667	2,030,047
	59,239,380	83,262,920

Stock of grain in elevators:

	This week.	Last week.	Same week last year.
Wheat	2,708,000	2,915,000	4,485,000
Corn	6,655,000	6,440,000	6,096,000
Oats	1,348,000	1,325,000	1,291,000
Rye	453,000	453,000	262,000
	11,164,000	11,133,000	12,134,000

GRAIN SITUATION AT DULUTH.

Duluth, June 29.—Shipments of flaxseed for this spring by the American Linseed Co. have amounted to nearly 2,000,000 bu., and enough more is booked for immediate forwarding to make up that amount. Other shippers, including Spencer Kellogg, have done little this season, though Mr. Kellogg's mills have received more than 3,000,000 bu. from here since the beginning of the crop year. There are now 6,200,000 bu. flaxseed in store at the head of the lake, and it is probable that more than 5,000,000 of it will be carried over to the coming crop. The Yakima, Vulcan and Ira Owen loaded for Chicago on Monday.

Stocks of wheat decreased slightly last week, and now aggregate 1,200,000 bu., and of all grains, including flaxseed there are 7,500,000 bu. in store here. Receipts are more liberal, are gaining slightly each week, and there is good demand for all coming in. Mills and shippers take what wheat comes and the coarse grains seem to find ready markets. Total receipts for last week were 410,000 bu. and shipments, including mail withdrawals, were 472,000. Of this latter more than 946,000 bu. were flaxseed.

Freights are very dull and low, and cargoes cannot be had by any but line boats, and not enough for them. There has been more elevator trouble at Port Arthur, and shipments from there are cut down once more. But there is plenty of activity in ore and coal, while package freight generally is moving well.

The stages of water prevailing at the Lime Kiln crossing so far this year have been extremely favorable to the establishment of cargo records. The water has not been less than 19 ft. 6 in. at the crossing and has occasionally been 20 ft. This depth, however, is not to be continuously depended upon. It is probably deeper now than would be the average for the entire season, the low water stage usually being reached in the fall. Last year not more than 18 ft. could be depended upon at the crossing.

The steamer Tionesta, on June 23, opened her season between Buffalo and Duluth for the Anchor Line. The Tionesta was launched last spring and is handsomely equipped. She is commanded by Capt. Edward A. Martin.

The new steamer Umbria cleared from Milwaukee last week with 6,847 tons of iron ore, the largest cargo ever taken out of that port. The Umbria was built at Cleveland for the Hawgoods and this is her maiden ore cargo.

For failure to report his arrival from a foreign port, and allow examination of cargo, Capt. Joseph White, master of the Jay Gould, of Lake Michigan & Lake Superior Transportation line, was fined $1,000.

Merchant Marine Commission.

The meetings of the Merchant Marine Commission, appointed at the last session of congress to inquire into the state of American shipping in the foreign trade, have during the past week been held in the great lakes region and have been marked with success. The commission assembled in Chicago on Friday last, immediately after the adjournment of the Republican national convention. The Chicago meetings were held in the assembly room of the Illinois Trust & Savings bank. Nearly all of those who appeared before the commission in Chicago advocated a subvention of some sort to restore the prestige of the American flag upon the high seas. Only one man, Mr. James A. Patten of the firm of Bartlett, Frazier & Carrington, was opposed to the extension of aid. Later even he modified his position by feeling that a bounty between South American and South African points would be of benefit.

Mr. W. C. Sickel, western freight agent of the International Mercantile Marine Co., did not favor aid in general but had to admit that it would be beneficial at least in South American trade.

The delegation was welcomed in Chicago by City Controller McGann in the absence of Mayor Harrison, and Mr. W. L. Brown extended a greeting on behalf of the Illinois Manufacturers' association, whose guests the commission were while in Chicago.

The principal speech at Chicago was made by Mr. John Barrett, who has had considerable training in the diplomatic service, and who is at present United States minister to Panama. Mr. Barrett said:

SPEECH OF MR. JOHN BARRETT.

"I have the honor to submit herewith a few facts for your consideration, in regard to our commerce with South America, and to urge most respectfully that your commission will see fit to recommend in its report that steps be taken for the furtherance of better steamship communication between New York and the leading ports of eastern South America, particularly Buenos Aires, Argentina. Inasmuch as I have only recently arrived from Argentina, where I was United States minister, en route to my new post in Panama, this is my first opportunity to appear before your body. What I have to say is founded on a careful study of conditions in South America, especially in the great republic of Argentina, during the last six months.

"By way of emphasis and better understanding of my recommendations, I beg to call your attention to the importance of southern South America. Argentina is today one of the most prosperous and progressive countries in the world. Covering an area of 1,200,000 square miles, or as much as all that section of the United States east of the Mississippi river plus the first tier of states west of it; having a magnificent seaboard on the Atlantic of over 1,500 miles with its interior penetrated by the extensive river system of the River Plate; reaching from about twenty degrees south of the equator to over fifty-five degrees south or located almost entirely in the temperate zone; possessing a climate suited to an energetic and ambitious race; and producing those products which have a ready sale in the great markets of the world, Argentina certainly commands the attention of the United States. Its capital city, Buenos Aires, is one of the largest commercial centers of the western hemisphere. It has a population of nearly 1,000,000 and is growing more rapidly than any city in the world with possibly the exceptions of New York and Chicago. Situated about 200 miles from the sea on the River Plate, it is approached by steamers from all portions of the globe. It has a system of docks and wharves unequaled by few ports even of Europe. Over $25,000,000 were expended in their construction.

"The commerce with foreign lands of Argentina last year amounted to $360,000,000. Of this the share of the United States was only $24,000,000 or $16,000,000 exports to Argentina and $8,000,000 imports from that country into the United States. There is no valid reason except that of insufficient steamship relations why our trade with Argentina should not become $50,000,000 per annum instead of the present low figures. Considering that Argentina now has only about 5,000,000 people, her commerce averages over $70 per head. This demonstrates the richness of the country, and, as the population grows to greater proportions in the near future, the foreign trade will correspondingly expand. We hear a great deal about the wealth or possibilities in Asia, of the possibilities of commercial exchange with Japan and China; and yet China's foreign trade last year, notwithstanding her population is over 300,000,000, was less than that of Argentina with 5,000,000 people. Ambitious, progressive Japan, with 40,000,000 people, only barely reached higher figures than this wonderful nation of South America. As for the future, therefore, I contend that we should give more attention to South America than we have in the past, or at least divide the interest we show in the Far East. I will not weary you with adding to my argument concerning Argentina the immeasurable possibilities also of trade with Brazil which is just north of Argentina, or with the lesser countries of Uruguay and Paraguay, which would also be tributary to the steamship service which I advocate.

ADVOCATES A MONTHLY LINE OF STEAMERS.

"Coming now to the direct point in hand, it is my opinion, supported by nearly all the authorities I consulted in South America, that at least a monthly line of steamers, carrying mails and passengers and having the freight facilities characteristic of such vessels, should be established with its terminal points at New York in the United States and Buenos Aires in Argentina. At present there is no through mail and passenger and fast freight service between these two ports. There are freight steamers leaving New York every week for Argentina, but they are slow and unsuited for mails, passengers, and fast freight or express. There is one line of fairly good mail and passenger boats running from New York to Rio Janeiro, but no further. Connections at Rio with Buenos Aires are not regular, and confusion constantly results in attempting to communicate or travel this way. Nearly all persons in southern South Africa who wish to proceed to the United States must do so by the way of Europe, and often the mail goes the same way.

"There are six first class mail and passenger steamship lines between Buenos Aires and European ports, so that it is possible for mails, passengers and important or perishable freight to be despatched at the rate of a steamer and a half a week. The business men of Buenos Aires can write to Europe and receive a reply easily in fifty days. It is very seldom that they can ever communicate with New York and Chicago and get an answer in less than eighty days. Anyone who is familiar with business methods and the importance of good mail exchange, realizes what a handicap this is to the extension of American commerce. I have heard scores of South American merchants and bankers complain of the wretched mail arrangements between the United States and Argentina. If there were direct and regular service between Buenos Aires and New York, there is no doubt in my mind that four-fifths of the southern South Americans who travel to the northern hemisphere on either business or pleasure would come or return via the United States. It

was estimated in Buenos Aires, just as I was leaving there about May 1, that at least 5,000 persons would have visited the World's Fair from Argentina, if they could have come direct in first class vessels. The principal reason that we do not have direct steamship communication now of the class which I mention, is that no company is willing to undertake it as as experiment or venture unless they can receive a compensation for carrying the mail which will ensure them against primary or temporary loss. I have talked with leading steamship men in Buenos Aires, Paris, Hamburg, and London, as well as in New York, and they have all told me that it would be impossible to initiate a great and important undertaking of this kind unless they could receive sufficient support from United States and the South American republics to protect them while they were building up sufficient traffic and travel to maintain the line on a paying basis.

"I have now the further honor and pleasure to inform your commission that the Argentine government has informally intimated to me that it stands ready to do its share in paying for this transportation of mails, which will enable a first class line to be established, provided the United States will do its part. General Roca, the able president of Argentina, said to me, just before I was leaving Buenos Aires, that he and his countrymen maintained that the greatest possible influence which could be exerted for the building up and cementing closer relations of friendship and commerce between the United States and the east coast of South America, would be the putting on of a first class mail, passenger, and fast freight steamship line between New York and Buenos Aires, which would also touch at such ports as Rio Janeiro, Bahia, Santos, and Montevideo. The newspapers of Buenos Aires, which have great influence all over South America, are unanimous in favoring such a line and in giving it government support. In fact it is a constant source of surprise to South American statesmen and business men that the United States with all its claims to greatness and progress is not willing to take the initiative in a movement of such importance and which South America is ready to follow with earnestness and even enthusiasm. Even if there is opposition in the United States to the granting of what are termed 'subsidies,' it would seem as if there ought to be no objection to paying a reasonable sum for carrying the mails, especially when Argentina, Brazil, and possibly other countries of that section stand ready to co-operate. The amount that the United States would find it necessary to appropriate for such facilities would be completely lost and forgotten in the increase of our trade that would result with Argentina, Brazil, Uruguay, and Paraguay. In other words, for a few hundred thousand dollars per annum the United States would give the business interests of our country new and unrivaled opportunities for developing their trade to large proportions in a field which already has a commerce with the outer world of nearly $800,000,000 but where the share of the United States is now less than $100,000,000."

A VARIETY OF EXCELLENT SPEAKERS.

At the conclusion of Mr. Barrett's address Secretary George F. Stone of the Chicago Board of Trade told the commission that the Board of Trade had not any particular plans to suggest for the restoration of American shipping, but adhered to the principle of restoring the flag to the high seas on merchant ships, if it is a possible thing to do so.

"We deplore the fact," said he, "that the merchant marine of the United States has practically disappeared from the high seas. Last year only 7 per cent of all the export products of this country were carried in American ships. These figures show how our merchant marine is deteriorated. With a man like President Roosevelt guiding the ship of state this seems an opportune time to revive interest in this important subject, and Chicago sincerely hopes that your work may be crowned with success."

Mr. Paul Tietgens expressed doubt whether American ships could compete with the cheaply constructed ships of European countries without aid from the government. He favored the building up of the merchant marine with all countries, especially with South America, Africa and Australia. He did not believe that this could be done unless the government gave aid to shipping for a limited period of time.

Mr. C. E. Kremer also urged the giving of bounty to possible lines between United States ports and South American and South African ports. Incidentally he referred to the line which had attempted to carry on a freight service between Chicago and Great Britain and which had failed because of the high insurance rates.

Mr. W. L. Brown, president of the American Ship Building Co., told the commission of the remarkably prosperous condition of ship commerce on the great lakes and ascribed it to the fact that the coastwise laws protected the American shipowner. He also gave some interesting figures concerning the economy with which freight can be handled on the lakes, due to the greater carrying capacity of the ship and the improved facilities with which cargo is handled at the receiving and shipping docks. He also referred to the great addition which had been made to the freight tonnage of the great lakes during the past four or five years and added that the American ship builder could build as cheaply as the Canadian builder.

A powerful address was made by Mr. J. J. Fitzgerald, representing the Brotherhood of Iron Ship Builders and Boiler Makers. This organization is seeking some aid to shipping in the hope of providing employment for its members, half of who are now idle owing to the stagnation of the industry throughout the country.

"We have the natural products here," said Mr. Fitzgerald, with much earnestness. "We have the timber in the forests, we have the coal, the iron and the steel, and we have the mechanics. Why not encourage American capital to build ships in our own ship yards and thus give continued employment to the American mechanic."

He added that a bounty would help labor more than it would capital on the theory that capital can easily find some other source of investment while labor has to wait for the chance to work.

Capt. W. W. Bates of Denver, former commissioner of navigation, urged the passage of a measure that would give life to the American merchant marine from the bottom and put it at the top in the competition of the world. An argument along similar line was made by Mr. Robert B. Armstrong, assistant secretary of the treasury. The Chicago meeting closed with a dinner given to the commission by the Illinois Manufacturers' association, at which over 150 members attended.

THE COMMISSION REACHES DETROIT.

Immediately after the close of the Chicago meeting the commission went to Detroit, arriving there on Saturday evening. Detroit was especially hospitable to the members of the commission. On Sunday afternoon Mr. Wm. Livingstone, president of the Lake Carriers' association, took the commission on a private car to the Country club, where dinner was served in the evening. In addition to the commission Mr. George Russel, Mr. J. C. Hutchins and Mr. Homer Warren attended the dinner as guests. Mr. George H. Barber extended an invitation to call at his home, but owing to the lateness of the hour at which the dinner party broke up it was found impossible to accept it. The dinner at the Country club was one of the most enjoyable incidents in the tour of the commission, as it gave them what they most needed—a restful afternoon and evening.

The business sessions at Detroit were held in the rooms of

the Board of Commerce, which is rapidly taking a foremost position in the business life at Detroit under the guidance of Mr. Ryerson Ritchie. Mayor Maybury of Detroit welcomed the commission to the city saying that the growth of great lakes commerce was a pride to the great lakes region and a source of wonder to the rest of the world. He assured the commission that while Detroit could probably only have an indirect concern, at any rate for the present, in the conclusions of the commission, it did not lessen the interest of the city in its deliberations. He hoped that the commission would receive the encouragement which it deserved in its investigations and that something might come out of it for the benefit of the carrying trade of the country.

Senator Gallinger in responding said that he desired to set forth the purpose of the commission in order that it might be understood and not misunderstood as it has been in certain quarters. He said the commission was not making the investigation on its own volition but in accordance with congressional enactment which directed them to investigate and report to congress what changes might be necessary to assist in upbuilding the merchant marine of the United States. Taking up this work the commission had already met in New York, Philadelphia, Baltimore, Boston, and Chicago and it invited gentlemen to appear before them without reference to their views.

"We are not endeavoring," said Senator Gallinger "to find reasons for subsidies; we welcome all information. We did not come here for the purpose of discussing legislation so far as the lakes are concerned. You do not need protection. Nature has protected you in the first place, and congress has also protected you in the enactment of the coastwise laws. The commission is taking the broad view, however, that whatever helps one section of the country helps all, and it is with that thought in mind that we are holding our hearings in the great lakes region. As you know, we once carried 92 per cent of our foreign commerce in our own ships; now we carry less than 8. This is deplorable and ought to be remedied. I find that of 292 vessels passing through Suez last month only one carried the American flag, and it is more than likely that that one was the yacht of some American millionaire. If there is some proper method whereby our merchant marine can be rebuilt, it will be applied. We are very glad indeed to come to Detroit."

MR. J. L. HUDSON ADDRESSES THE COMMISSION.

Mr. J. L. Hudson, president of the Board of Commerce, spoke briefly. He declared himself to be an optimist of optimists and while opposed to paternal government felt that something should be done for shipping. He also referred to the pent-up fleet on the great lakes and believed that they had a natural right to compete in over-sea commerce. He considered Chicago to be as much an American seaport as New York, and definitely advocated the deepening of the Erie canal to admit of the passage of the largest of the lake freighters. He assured the commission that whatever help could be rendered to the cause by the Detroit Board of Commerce would be most cheerfully extended.

Representative Charles H. Grosvenor said that on the threshold of their deliberation and in view of the misunderstanding of the powers and trend of the commission, he desired to say that the commission had not come to Detroit to discover an argument in favor of ship subsidies. He added that he would as lief have come with a well-developed case of smallpox and expected a hearty welcome as to come as an advocate of subsidy.

"We are not wedded to any form of investigation," said he. "I am as open minded as a juryman and personally would not know what to do today if the entire subject would be left to me. Whatever is done will be the concentrated wisdom of the advices given to this commission. I desire to say, however, that if it were not for subsidies generously extended by the government in the past, your property today would not be worth twenty-five cents on the dollar. The national government found you with barriers in your waterways, with great obstacles in your commerce. The government removed them. How? By contributions from the public treasury. They were subsidies to the commerce of the lakes. If this had not been done you would still have had your old-time ships and your old-time commerce. When we started to help you by liberal subsidies there was 7 ft. of water in Lorain harbor and only 9 ft. in Ashtabula harbor. You are boasting of the cheapness of freight on the lakes when the primal fact is that it was achieved by the bigness of the ship made possible by the deeper channels dredged by the general government. Why, you are living on subsidies. You have built this city of Detroit on subsidies. Just recall what has been done for you. The sum of $10,000,000 has been expended on the Lime Kiln crossing and millions more on the St. Clair flats and Sault Ste. Marie canals. You also stand protected by a system of legislation which is the bulwark of this commerce. I hope some way may be devised whereby your commerce can get out unbroken into the highways of the world."

FINE STATISTICAL SPEECH BY MR. LIVINGSTONE.

As soon as Representative Grosvenor had concluded, Mr. Wm. Livingstone, president of the Lake Carriers' association, related a few facts concerning the great growth of the tonnage on the lakes. He felt, however, that the commission was so well acquainted with these facts that to recast them again was like carrying coal to Newcastle. Chairman Gallinger assured him that the facts presented in succinct form would add greatly to the commission's information and urged him to speak at length.

Mr. Livingstone very truly said that the commerce of the great lakes is the main artery of the business industry of the nation, but that few realized its great importance. He then related that in 1881, which is the first year in which statistics of lake commerce were registered, the total tonnage passing from St. Mary's canal was 1,500,067 tons. In 1892 it had reached a total of 10,000,000 tons and had increased to the enormous figure of 36,000,000 tons by 1902. Looking at it in another way the registered tonnage passing through St. Mary's canal in 1892 was 10,647,000 tons as against 31,000,000 tons for 1902. The maximum tonnage passing through Suez canal is 10,000,000 tons and it is to be borne in mind that the Suez canal is open through 365 days of the year while the average season for Sault Ste. Marie is 215 days. Notwithstanding the fact that the wages paid on the great lakes are the highest that obtain in any merchant service, freight is carried at less cost than anywhere else in the world. The average cost of transporting a ton of freight one mile on the lakes during the past five years has been .98 of a mill as against 3½ mills for the most economical of American railroads. Of course, various things have contributed to bring this about, notably the increase in the size of the ship and the greater facilities for loading and unloading. The progress of industrial development on the lakes has been marked by a steady decline in the carrying of freight. For instance, in 1861 it cost 11½ cents to carry a bushel of corn from Chicago to Buffalo; in 1902 this same bushel was carried for 1½ cents, while during the present year it has actually been transported for ¾ of a cent. Mr. Livingstone desired it to be understood, however, that this latter figure was below the actual cost of transportation when handling costs, meaning loading and unloading charges, are subtracted. The average unloading time is ten hours. The record time for unloading made, however, under special conditions, was 3 hours and 56 minutes, when 5,217 tons of iron ore were taken out of the steamer James H. Hoyt at Conneaut. Mr. Livingstone referred to the giant freighter Augustus B. Wolvin which was launched at Lorain last April and which has just completed her first round trip.

She brought down 9,727 gross tons of ore which translated into bushels would be roughly 400,000. Converting this grain into flour it is found that it would make over 20,000,000 lbs., sufficient to supply one quarter of the inhabitants of the United States with one loaf of bread each. Therefore in thirty days the Wolvin alone could bring enough grain from the head of the lakes to supply every man, woman and child in the United States with one loaf of bread. He admitted that this wonderful facility for transportation had been developed by the generous appropriations of the general government.

Representative Miner at this point stated that the government had appropriated during its existence $500,000,000 for the development of the harbors in the whole of the United States. Mr. Livingstone spoke of the Panama canal which he estimated would cost altogether about $250,000,000, and while he approved of the undertaking he said that it would be several years before 10,000,000 tons went through it in a year.

"And most of this will go in foreign bottoms," interposed Senator Gallinger.

"Yes, sir," said Mr. Livingstone.

Senator Gallinger hoped that the first ship that went through the Panama canal would be a great American merchant ship which hope was most heartily endorsed by Mr. Livingstone. Touching upon the great transformation in the character of tonnage on the great lakes Mr. Livingstone stated that in 1863 93 per cent of the tonnage was sail and 7 per cent steam, whereas today 96 per cent is steam and 4 per cent sail. At the suggestion of Representative Miner Mr. Livingstone stated that he would file with the commission data showing when steel ship construction began on the great lakes and what its influence has been in cheapening costs. He also offered to file the wage schedules in contrast with the schedules that obtain on the ocean at the request of Representative Spight.

Senator Gallinger stated tnat the commission had discovered that there were three reasons why the American ship could not successfully compete in the foreign trade. The first was the added cost of construction, the second the higher cost of operation and the third that other nations had subsidized their shipping.

At this point Senator Gallinger announced that Mr. John A. Penton of the Marine Review would, owing to his wide acquaintanceship, introduce the speakers of the commission during the remainder of the hearing. Mr. Penton desired to present Mr. Frank Kirby of the Detroit Ship Building Co., but Mr. Kirby was unfortunately unable to reach the meeting in time. Mr. A. C. Pessano, president of the Great Lakes Engineering Works, was thereupon introduced. Mr. Pessano addressed the commission with great earnestness, saying:

MR. PESSANO'S COMPREHENSIVE ADDRESS.

"I do not believe that anything can be said today which will add in any degree to the strength of the arguments already advanced by the many prominent men of other cities in the interest of the American merchant marine. I believe the records of the many discussions and arguments during recent years would justify the statement that the representatives of the people of these United States do not require an array of statistics to prove to them that the United States of America has lost her prestige on the high seas and that the stars and stripes are seldom seen floating from the vessels carrying the world's goods; these humiliating facts are too well known to you, gentlemen, and any attempt to further prove their correctness would be a waste of your valuable time. I believe, gentlemen, you have passed by that stage of doubt, and that you join heartily with the great agricultural, mining, manufacturing and banking interests of this country in saying that congress must act and act quickly on the question before us. The representatives of the people of the United States when assembled in Washington at the next session of congress will surely brook no delay if they heed the voice of the people in their demand for American built boats. With your ear to the ground you can today hear the rumbling noise growing stronger and louder all the while and coming up from every hamlet, every village, every lumber camp, every mining district, from every agricultural and industrial centre, because the people—the masses—are awakening to the fact that the building of the American merchant marine is an 'American necessity.' Too much time has already been wasted in heated and passionate debate, savoring entirely too much of politics. Gentlemen, this question is greater than any political party, yes, greater than both of the great political parties of this country; it is greater than politics because it appeals to the honor and pride of every true American citizen, and should be so treated by our representatives; congress should not longer delay in deciding as to whether 'subsidies' or 'differential duties' is the proper plan to adopt for the upbuilding of the American merchant marine.

SOMETHING MUST BE DONE.

"Gentlemen, you have been devoting your valuable time to gathering information as to which plan is the best for adoption. It is possible that any decision reached will not satisfy every one, but the ever increasing feeling of uneasiness makes it mandatory upon you as representatives of the great mass of interested people of this country to decide upon something, and I believe that either one of the plans which has been before congress should be adopted rather than tolerate further delay. Congress may make a mistake if subsidies are adopted; it may make a mistake if differentials are adopted; in either case there is a possibility that no mistake will be made; it is a certainty, however, that a great mistake—a national disgrace—is being and will continue to be thrust upon the people of the country until congress rises to a full sense of its responsibility and decides this great American problem by pure American patriotism, irrespective of politics, free from partisan or sectional feeling. The losses already sustained by the people of this country are irreparable, and after all, gentlemen, it is the people and not the ship builders you must consider; the producers of this country are the most directly interested class; the people who elect their representatives to make their laws and to so administer the affairs of the country that the greatest possible results will be attained are going to be heard very emphatically when congress is next in session; therefore, whether the ship building business of this country is increased either by direct 'subsidies' or by 'differential duties' (and one of these plans is no doubt preferable to the other)—I speak for 'differential duties,' yet if the subsidy plan should be decided upon by congress as the best, I would say 'Well done, good and faithful servants,' because the poorest legislation proposed in this case is a million times better than no legislation at all, and will be a step in the direction of progress. Any money spent by congress which will give work to the American ship yards will be all returned to the people at large through the various channels of business. There is no trade or industry I know of from the farmer to the banker which will not receive a direct benefit from the building of ships by American mechanics to carry the ocean traffics of the United States.

"I am interested and speak earnestly and sincerely on this subject because I fully appreciate its importance. As a ship builder of the great lakes, I know every vessel which is built on the coast will require millions of pounds of ore from which the steel plate is to be made. I know what this means for the miners of this country, and starting from that viewpoint, please try and picture the necessities in the commercial, agricultural and industrial trades growing out of the additional mining of millions of pounds of ore alone which will be required. The most optimistic man will utterly fail in his effort to describe what it will mean to this country's wealth and to its people. We simply will add another large

industry to this country, which will help trade conditions by the employment of many, many thousands of people.

ERIE CANAL SHOULD BE DEEPENED TO 25 FT.

"New York state has voted to spend $101,000,000 to get a 1,000-ton barge canal from the great lakes to the Atlantic coast; New York state is benefiting every state in the union by her most noble act of Americanism. Now that the single state of New York has shown such progressiveness, every state in the union, through its representatives in congress, should vote to spend sufficient money to make the waterway at least 25 feet deep and at least 300 ft. wide, at top so that the products of the vast farms and mines tributary to the great lakes and likewise the manufactured articles together with the anthracite coal, etc., of the east can be cheaply transported, and there distributed to the millions of people living either in cities bordering on or tributary thereto. This additional means of transportation is an absolute necessity and congress should act upon it at once, especially as the waterway is now assured. It is only a question of size, and that question should be one of national importance as a means towards adding additional ships to our merchant marine; this phase of the question should receive the most careful consideration. During the Spanish war President McKinley was obliged to buy foreign boats to be used in transporting the American soldiers, and yet there were steel steamers in abundance on the great lakes which could have been used by the United States government if there had been a channel large enough to permit of their passage to the coast. Congress is spending—and rightfully so—millions to build up an American navy, and also upon fortifications. This money is purely for defense purposes. Is it not imperative that the door should be opened whereby the United States government could secure, if necessity arises, all the transports she needs? No one today questions the wiseness of Congress in voting money for the building of the Isthmus canal. When finished it will be cheap at any price. Likewise, no one can logically question the wiseness of a deep waterway from the lakes to the coast. It will be a money maker and a government necessity, no matter what it costs, and the demand for it is right at your door. Action upon it cannot be delayed with safety to the commercial, agricultural and manufacturing interests of this country.

"If there is any doubt in your minds as to the wisdom of a great waterway from the lakes to the coast, it is only necessary to refer to the commercial statistics of Germany and other countries to prove beyond a doubt the wisdom of governmental assistance in establishing great waterways for increasing the traffic of this country, and thereby adding to the merchant vessels of the nation, useful in time of peace, a necessity in time of war. Open up the waterways to the coast, and with a moderate differential duty, the people of the United States will change the maps of the world. The lake ship builders would welcome this. We have no fear, and are certainly not afraid of foreign competition. The greatest good for the greatest number is the only prospectus for congress to consider and act upon. The Canadian government is fully alive to the importance of this great subject, and is now about perfecting arrangements to establish a deep waterway for the benefit of her people. Gentlemen, your next session of congress is going to be one of making history greater than the world has ever known of before, when these questions are taken up and definitely made into laws. I believe today that congress is ready and willing to take definite action, and will welcome the recommendations of this honorable commission."

Incidental to the discussion of the work of New York state in developing the Erie canal Mr. Pessano urged the construction of a ship canal from the lakes to the ocean that would have practically twice the depth that New York is going to give to the Erie canal.

"What route would you suggest?" asked Senator Gallinger.

"I would advocate the present route of the Erie canal," replied Mr. Pessano.

"Don't you think," asked Senator Gallinger, "that New York is unwise in spending so much money for so shallow a stream?"

"No, sir," replied Mr. Pessano, "I think the state of New York will be the gainer by reason of the construction of the present enlarged canal, but the nation would be the gainer if it were made deeper."

"What would you say," asked Senator Gallinger, "it would cost to convert the Erie canal into a ship canal?"

"Approximately $300,000,000, all told," replied Mr. Pessano.

Senator Gallinger then referred to Mr. Pessano the question of differential duties and called his attention to ex-Senator Edmunds' views on the abrogation of treaties. Mr. Pessano replied that he had been originally in favor of a subsidy but feeling that the opposition to it was such that it could not probably be overcome, he now advocated differential duties as a compromise. In other words he advocated them under necessity. Senator Gallinger replied that something should be done to reserve to the United States the $200,000,000 which is now being paid annually in carrying charges to foreign ships and said that the commission desired all possible information regarding differential duties owing to the practical difficulties which exist in the various commercial treaties.

MR. WISNER ADVOCATES A DEEP WATERWAY.

Mr. George Y. Wisner, who has been for the past three years the consulting engineer of the Montreal & Georgian Bay Canal Co., was next presented. Mr. Wisner was a member of the Deep Waterways Commission which went very thoroughly into the question of a deep waterway to the sea in 1897. He declared the Erie canal to be inadequate and expressed surprise that in spite of all example New York seemed determined to go ahead with the construction of a shallow waterway. He then stated that this decision on the part of the state of New York had given encouragement to the Dominion government to further the project of a ship canal from Georgian bay to Montreal. He said that the Canadians have a natural outlet from Georgian bay to the deep water of the St. Lawrence river. The distance is 425 miles, but of this only 40 miles would be canal; the remainder is entirely natural deep draught water. He added that the Canadian government regarded this canal as a national necessity and is quite determined to execute it. He also stated that within the past three or four months, or since the state of New York seemed definitely pledged to a 12-ft. waterway from Buffalo to Albany, a construction company had been formed in Canada to undertake the work of building the Montreal and Georgian Bay canal. He thought, however, as a domestic consumption usually dictates the route, that a deep waterway from the lakes to the ocean through American territory would result in retaining the greater part of the trade. Mr. Wisner also took occasion to speak upon the development of the freight carrier on the lakes and felt that its economy had been reached. He thought that 500 ft. was the maximum length for an economical lake freighter and argued that any money put into a steamer for additional length would have no real excess earning power. His point was that the lake haul is short and that therefore a third of a steamer's time is spent in port either loading or unloading. She was not earning money while at dock and he therefore felt that whatever added carrying capacity she might have would not be more than sufficient to offset the fixed charges, such as interest, which cannot be escaped. He also stated it as an axiom of modern transportation that freight must pass without breaking bulk from one terminal to another to be eco-

nomically carried. He therefore had no hope of the ultimate utility of any waterway that did not permit of the carriage of freight to the coast without the necessity of rehandling.

At the conclusion of Mr. Wisner's address the commission were invited for a trip on the river by Mr. Albert Schmidt in his steam yacht the Kaloolah. A trip was made around Belle Isle, during which time lunch was served. A run was also made to the ship yard of the Great Lakes Engineering Works, which was inspected by the members of the commission.

THE AFTERNOON SESSION AT DETROIT.

At the afternoon session of the commission Mr. Fred Baker delivered an argument in opposition to ship subsidy. He said that no one was more devoted to the interests of the merchant marine than he but he was opposed to subsidy on the ground that it was unconstitutional. He denied that congress had unlimited legislative authority maintaining that the constitution conferred upon it authority to legislate upon certain well defined subjects. He could not find that any of the subjects embraced a subsidy bill. Senator Gallinger pointed out that President Franklin Pierce maintained that congress had no right to appropriate money for the improvement of waterways and had consistently vetoed all such bills. Representative Grosvenor thereupon asked what section in the constitution gave congress the authority to appropriate money for the improvement of waterways. Mr. Baker replied that the authority might come under the general provision authorizing congress to establish post roads. Representative Grosvenor then referred to the St. Clair ship canal and desired to know if that could be considered as a post road. Mr. Baker believed that it could.

Senator Gallinger stated that from 1847 to 1858 the subsidy measure had been on the statutes and that for those eleven years an American shipping line had been subsidized. He asked Mr. Baker if he considered that wrong, and Mr. Baker replied that he did. Senator Gallinger then stated that the general government had paid $998,000 to four steamers of the American line and desired to know Mr. Baker's opinion of that performance. Mr. Baker replied that that money was paid for carrying the mails. Mr. Gallinger then asked him what he would say about it supposing the sum should be $25,000,000 instead of $998,000. Mr. Baker stated the total, whatever it might be, would be no special significance upon the right of congress to pay for carrying the mails.

"You must understand," said Senator Gallinger, "that no one presumes that the actual transfer of this small box of mail is really worth $998,000."

The senator also referred to the fact that a large sum of money is being paid annually to a southern railway for expediting the mails from Washington to New Orleans. The sum is altogether out of proportion to the actual cost of carriage, but it is done to give that section of the country the benefit of the fastest mail service. Mr. Baker saw no objection to this. Nor did he have any special objection to differential duties.

Mr. George Burns, president of the Trades and Labor Council, said that the proposition appealed to him generally, but urged the commission not to forget the common seamen. Senator Gallinger took occasion to read to him the section of the act creating the commission which provides that an inquiry should be made into the condition of the seamen employed on American ships and to ascertain what might be done to make their calling more desirable.

"If you cannot go into this," said Mr. Burns, "with honor to the men who do the work, let us keep out of it altogether."

That was the keynote of the brief address. Mr. Burns thought it was useless to attempt to build up a great navy unless the men to man the navy could be recruited from the merchant marine.

A most powerful address was made by Mr. H. P. Morley of Detroit, who touched upon the trade with Cuba. His address was really so important and so comprehensive that it will be published in full in the Review later. Mr. Morley's contention is that this trade is really American trade and should be reserved to American bottoms.

Both Senator Gallinger and Representative Grosvenor declared that this freight would have been reserved to American bottoms had not the subject been entirely overlooked by the shipping interests of the Atlantic coast when the reciprocity treaty with Cuba was made. At that time it would have been a very simple matter to have stipulated in the treaty that the interchange of products should be in American vessels, whereas now in order to encompass it it would be necessary to make a new treaty.

The next speaker was Capt. J. M. McGregor, president of the International Pilots' Association. His address had to do with the labor costs in the construction of a ship. He represented that it was not more than 20 per cent. The commission was quite anxious to determine at what point he began to compute the labor cost, that is, whether he regarded steel, which is, of course, the principal item entering into the construction of a ship, as raw material. This point was not further elucidated, but it is likely that Capt. McGregor regarded steel as the ship builder's raw material.

Congressman J. B. Corliss, who was the next speaker, declared that the people of the United States are in favor of upbuilding the merchant marine. He referred to the fact that sixty years ago the United States had a considerable merchant marine in contrast to one of insignificant proportions to the present time. But this, however, he regarded as quite a natural condition. Sixty years ago the inhabitants of the United States were largely congregated in the coast cities and therefore a fair part of their energies naturally went into shipping and ship building. However, when gold was discovered in California it resulted in a rush to the Pacific coast and in the discovery of countless acres of desirable lands lying between. The energies of the people have gone into the exploitation of these lands rapidly where the profits have been large in proportion to the capital invested rather than into shipping where through competition only a slight profit is to be expected. Like Mr. Grosvenor he regarded river and harbor improvement as in effect subsidies. The railroads too have flourished under the beneficent influence of subsidies. This, however, is a condition not to be regretted but rather to be commended because it has been through generous aid to the railways that the great distances in this country have been annihilated and the interchange of products of one region with another made commercially possible.

"In my judgment," said Congressman Corliss, "we ought to have a considerable merchant marine by the time the Panama canal is completed, and I believe the way to get it is by differential duties. I am quite convinced that the people of the United States will uphold any act looking to the rehabiliment of the merchant marine service."

The concluding speaker at the Detroit meeting was Mr. George H. Barber. His speech was brief but very much to the point. He said the United States was a great country and ought to have a great merchant marine. The problem was how to get it in order that the products of our fields and mines and factories might be carried abroad in our own vessels. He hoped that out of the abundance of material with which the commission would have to work it would be enabled to evolve a satisfactory measure.

In the evening a reception was tendered to the members of the commission in the rooms of the Detroit Board of Commerce.

THE MERCHANT MARINE COMMISSION IN CLEVELAND.

The Merchant Marine Commission left Detroit on Monday night on the D. & C. steamer City of Cleveland and came to

Cleveland as the guests of the Cleveland Chamber of Commerce.

The commission met in the library of the Chamber of Commerce at 10 o'clock Tuesday morning and were welcomed by A. B. McNairy, president of the Cleveland Chamber of Commerce and by Mayor Johnson. Mayor Johnson in the course of his remarks said he feared his personal remedy for the present condition of the American merchant marine would not meet with general favor. He thought that the present restrictions should be removed rather than any new measures should be added to the statutes. By that he meant, of course, the repeal of the navigation laws and the admission of foreign ships to American register free.

The commission was met by a very representative company as there were present at the opening Mr. A. B. McNairy, Mr. J. C. Wallace, Mr. Ambrose Swasey, Mr. V. C. Taylor, Mr. Harry Coulby, Mr. Harvey Goulder, Mr. W. G. Mather, Mr. John Mitchell, Mr. C. H. Wellman, Mr. C. A. Grasselli and Gov. Myron T. Herrick.

Senator Gallinger in responding paid a beautiful tribute to the late Senator Hanna and also spoke in the highest terms of Congressman Theodore E. Burton, chairman of the committee of rivers and harbors. He then outlined the work which congress had imposed upon the commission and asked for general assistance from all citizens in the solving of this great national problem.

Representative Grosvenor in speaking for himself said that he was ready to do anything to upbuild the American merchant marine and had been quite earnest in his support of the shipping bill which passed the senate under Senator Hanna's name. He referred again to the appropriations for the improvement of channels as subsidies as he had done at Detroit. In closing he said that the commission was making a non-partisan endeavor to settle a business question and not a political question.

The first speaker introduced was Mr. Harvey D. Goulder. He spoke in a very clear and able manner. After referring to the great fleet of steamers on the great lakes he related the fact that a passenger and package freight line was started from Cleveland to Buffalo in 1892 with an abundance of capital and with the most competent management, but that nevertheless with all these advantages, and with a real necessity existing for the service, it was four years before the line paid any dividends whatever upon its stock. It was of course subjected to active, but by no means unfriendly competition of the railroads, the ramification of whose service through agents established in all parts of the country made it extremely difficult for the steamers to originate any business. This fact of the relationship of the railway to existing lines, Mr. Goulder very aptly applied to the condition in the over-sea service. Great Britain has lines well established with commercial lanes leading to all quarters of the globe, supported by commercial interests well entrenched in the various parts. If under the most favorable circumstances it would take four years for an American company to build up an American trade in competition with an American railway, how much longer will it take a company to get started when it has to fight against far more difficult conditions. This point appealed to the commission and it was quite clear to see that Mr. Goulder had made an impression. Mr. Goulder then touched upon the comparative cost of building ships in the United States and Great Britain. He mentioned an instance which occurred about a dozen years ago when a company decided to inaugurate a line of barges to trade between Great Britain and St. Lawrence river ports. It was found desirable that part of these ships should fly the American flag and the rest the Canadian flag. Tenders were therefore invited from American and English ship builders. There was no practical difference in the amount of the bids. The ship yards of the great lakes were accustomed to build barges of the kind desired in numbers and therefore could turn them out quite as economically as the English firm accustomed to the same sort of work. This point quite clearly demonstrates the practicability of the American ship builder to compete with the English ship builder upon equal terms.

The great ascendancy of Great Britain in ship building is due to the fact that the volume of their work permits the ship yards to specialize. That is, one yard builds only tramps, another passenger boats, the third battleships and the fourth torpedo boats. By this system they tumble from the berths like peas from a pod, and of course the ship builder has the great advantage of duplication. In the United States the volume of ship building is so small that no ship yard can afford to specialize, therefore one may see battleships in one berth and tramp and passenger steamers in adjoining berths. Both require entirely different parts and therefore offer no advantage whatever in joint construction.

Mr. Goulder then referred to the fact that notwithstanding the high cost of operating ships on the great lakes freight is carried much cheaper than anywhere else in the world. He illustrated how the ship in its construction has been made to conform to the development in loading and unloading devices. He traced this process of economy to the mines where by the use of steam shovels cars may be loaded with iron ore quite as cheaply as though it were common dirt. He thought that the United States had a natural right to carry one-half of its products abroad, and a measure that would accomplish this end would meet the approval of the whole people.

GOV. HERRICK ADDRESSES THE CONVENTION.

Gov. Myron T. Herrick in a very brief and able speech said that it was no longer a matter of doubt that the system of protection had been beneficial to the country. He thought that the mere fact that $200,000,000 is annually spent in freight charges on the export foreign trade of the United States, was in itself a sufficient reason for the passing of a shipping bill. He pointed out the effect on exchanges of the transfer of this enormous sum of money across the water. He was of the opinion that the Hanna bill which passed the senate should have passed the house.

"Had that bill passed," said Representative Grosvenor, "the United States would not have expended in ten years out of its treasury one-quarter of what would have been annually earned by the ships."

Gov. Herrick thought that it would be impossible to establish an American merchant marine under the unequal conditions that now exist by reason of foreign subsidies unless government aid was generously extended to it. He mentioned the fact that steamship bonds on the great lakes are regarded as a very desirable investment, made so by the protection afforded to the shipping of the great lakes by the coastwise law. He thought that the policy of protection had stopped halfway in not putting on the ocean an American merchant marine. He thought that the same process whereby our industries had been built up if applied to the merchant marine service would end quite as beneficially and declared that the protection system of the United States is not complete so long as the merchant marine is excluded from it.

Mr. Charles L. Pack, formerly president of the Cleveland Chamber of Commerce, was next introduced. He said that he was very glad indeed that Gov. Herrick had seen fit to refer to the desirability of steamship bonds. He stated that people were always willing to invest in profitable enterprises, and that every one knew that shipping on the great lakes was one of the most profitable of enterprises. He then related that within the past three or four months one of the trust companies of Cleveland had invested $1,800,000 in these bonds, but that today they had very few of these securities in their possession. They had been purchased by hundreds of people in the states of Ohio and Michigan, showing that the desirability of shipping on the great lakes is most widely recognized by the people. Mr. Pack said that he was engaged in the lum-

ber business, as was his father, grandfather and great-grandfather before him. He referred especially to the lumber trade of the gulf ports and gave figures to show its magnitude, adding that one-tenth of this lumber trade is exported and that for the past twenty years the export trade in lumber has been its great safeguard. When conditions were stagnant at home they were likely to be lively abroad. He stated, however, that this great trade is handicapped by the fact that means of shipment are spasmodic, being dependent entirely upon the tramp steamer. He thought a permanent business could be guaranteed to a line of steamers that would engage in it and suggested a premium on exports carried in American bottoms.

Both Senator Gallinger and Representative Grosvenor declared simultaneously that such a method was unconstitutional but admitted that it would be very effective if it could be applied.

Mr. Pack thereupon hoped they would discover a way of creating such a line and hoped that when they did they would bear in mind the small sailing vessels as well as the larger carriers.

Mr. C. A. Grasselli of the Grasselli Chemical Works, which has branches all over the world, made a very telling speech full of forceful facts. He showed that in 1861 the United States carried 65 per cent of its export whereas today it carries less than 9 per cent. He also thought it shameful that in a great many countries, enumerating them, not an American ship had called during last year. The merchant marine has not only not kept pace with other lines of American industries but had most sadly retrograded. He felt that it was undeniable that ships would push the trade of the country to which they belong in preference to those of competing nations and charged careless handling of freight by foreigners.

An American ship is an extension of American occupation and should be so regarded. He could not see how Americans could be expected to sail aboard ships at wages one-third less than they are able to make on shore. These discrepancies should be made good. He felt that in a serious withdrawal of tonnage, by reason of international complication, would result in closing down the mills and factories and throwing hundreds out of employment. He therefore thought it would be a part of wisdom to enact such legislation as would obviate any such contingencies.

MR. J. C. WALLACE STIRS THE CONVENTION.

The most vital speech of the day was made by Mr. J. C. Wallace, vice president and general manager of the American Ship Building Co. He said that he firmly believed that the time had arrived when something should be done for ships in the foreign trade. He stated that nothing could be done for the great lakes as everything had been done that could be done for them and their general condition is satisfactory.

He firmly declared, however, that in his opinion subsidy would not benefit the American ship builders, and proceeded to give his reasons therefor. He stated that 100,000 tons of steel had been sold at Belfast at $24 per ton, which would be $22 tidewater, as against $32 Pittsburg charged to American ship builders. In a vessel consuming 5,000 tons of steel this would mean $50,000. Concerning the cost of ship building and the employment of skilled labor at home and abroad, he stated that the American workman had the advantage of better machinery and mentioned especially the fact that pneumatic tools are in far more general use in the ship yards of this country than they are abroad.

He then related the history of the Minnetonka and Minnewaska. These ships were built four years ago for the American Navigation Co., organized on the great lakes, but having stockholders in New York and San Francisco. The ships, which exceeded Canadian canal dimensions were built in Cleveland, cut in sections and towed through the canal and joined at Quebec. They were built at approximately the same price as they could have been built for in England, as the price of steel was much lower in the United States than it is now, the steel pool, adding Mr. Wallace, not having then been formed. These two ships have made trips to Liverpool and have been around the Horn to San Francisco and have engaged in the oriental trade as well. They are practically, however, $90,000 worse off than they were when they started. The cost of operation is so great that they cannot make any money and they are now lying in a New York yard in idleness.

As showing the general conditions which obtain on board ships flying the American flag, Mr. Wallace said that the room in which the chief engineer sleeps was very elaborate and commodious and it was the purpose of having it shared between him and the second engineer, but the chief engineer insisted that a partition be put up so that it would be private. When one realizes the limited space that is given the officers and crews of foreign steamships the luxury of these accommodations can be appreciated.

Mr. Wallace stated that he felt that congress had done a good thing in extending the coastwise law to the Philippines but could not understand why their operation should be delayed for two years.

"We put it off for two years," said Representative Grosvenor," in the hope that some American steamship company would then be able to avail themselves of this provision. It was to have gone into effect this coming July, but we found no ships available for the service, and it remains now to be seen whether any will be constructed to take charge of it."

Mr. Wallace declared that there were eighteen ships flying the American flag lying in idleness in New York harbor now and insisted that he could not see the sense of delaying this beneficient legislation for two years.

It was quite clear that Mr. Wallace's testimony had stirred up the members of the commission. Representative Grosvenor desired to know what Belfast firm had purchased the 100,000 tons of steel.

"Harland & Wolff," responded Mr. Wallace.

"Who sold it?" asked Representative Grosvenor.

"The United States Steel Corporation."

Senator Gallinger then said that Admiral Bowles had testified that the cost of steel in the construction of ships did not amount to more than 5 per cent, and asked Mr. Wallace's opinion concerning it.

"My experience of course," said Mr. Wallace, "is confined to the lake trade, and on the lakes it amounts to 40 per cent."

Representative Miner returned to the attack and desired to know from whom the information had been obtained that steel had been laid down at Belfast at $24 per ton.

"The assistant of sales agents of the Carnegie Steel Co.," responded Mr. Wallace.

He then added that the information was common property and had been generally commented upon in the papers.

Senator Gallinger was very much impressed with Mr. Wallace's testimony and declared with great deliberation and feeling:

"If the situation is as depicted it is an outrage and measures should be adopted to remedy it."

This statement was much applauded by those present, especially so by Mayor Tom L. Johnson who sat behind Senator Gallinger during the entire hearing.

MR. A. S. UPSON ADVOCATES SUBSIDY TO SOUTH AMERICA.

Mr. A. S. Upson of the Upson Nut & Bolt Works pointed out that there was no way whereby an American shipper could reach the South American market directly. Goods have first to go to Liverpool before they can reach this great field. The trade is carried on by English, Italian and French ships. He thought it would be impossible to get business of importance in the South American market until this difficulty is remedied.

Representative Grosvenor asked whether trade would de-

velop if a line of steamers were established from New York to Buenos Ayres, and Mr. Upson said very emphatically that it would, saying that if they had a first-class line from New York and intermediate ports trade would grow very fast indeed.

There is at present a very large trade from South America to this country as the United States is a very liberal purchaser of South American products. He was hardly ready to say what the remedy for the present conditions shall be, but he believed that the commission should do something to establish a line of steamers with that part of the continent.

Mr. John Craig, president of the Craig Ship Building Co., Toledo, was the next speaker. He asked why it was that the United States had not a merchant marine, and answered it by saying that there is no money in it. He denied that the American ship builder had lost his cunning and reviewed the career of the schooner America and the efforts which have been made since to regain the cup. He also gave the records which were made by the clipper ships in the days before the civil war, mentioning the record trip of the clipper ship Dreadnaught across the Atlantic in thirteen days. He maintained that the ship builders had accomplished this because they had the opportunity to do so on the same theory that the lake ship builders have accomplished the wonders that they have because they had the opportunity to do so.

Mr. Craig then related that he had built two ships for the United Fruit Co. of Boston a couple of years ago. These ships are now idle, the company having discovered that it could charter foreign ships at a lower cost than it could operate the American steamers.

"The antithesis of protection is free trade," said Mr. Craig. "We have had protection all along the line. It would be a sorry sort of father indeed who would fail to aid his own son in endeavoring to establish himself in trade. It is precisely the same way with a nation. Shipping should be aided. Talking about the price of ships, I, with a couple of other ship builders, was invited to bid upon the construction of a ship carrying 3,000 tons deadweight. My bid was $240,000. A bid from an English firm was $130,000. We couldn't touch it. We would have lost heavily on the contract. Now I don't know what the remedy can be unless it can be found in protection. The ship during the whole progress of building is protected from the ore in the ground until it is out in the sea, and then it is left unprotected. Give us a chance and in ten years we will build ships for England."

The concluding speaker at the morning session was Mr. G. A. Tomlinson of Duluth. He said that Duluth was a long way from the financial centers and that the people of Duluth didn't know very much about the affairs at Washington.

"We know, however," said he, "how to raise wheat. The wheat market of the world is Liverpool. We can carry this wheat from Duluth to Buffalo, a thousand miles, for 1½ cents a bushel; we can carry it from Buffalo to New York for 3 cents a bushel. Then when it gets to the seaboard it meets the foreign ship and is subject to a freight rate that fluctuates violently. During the Boer war the available tonnage was so lessened that we found difficulty in transporting our grain abroad. Moreover, those of us in the northwest know how the British government prejudices grain transportation in favor of the Canadian route."

In response to an inquiry from Representative Miner, Mr. Tomlinson said that a six months' war between Great Britain and Germany would paralyze the American grain business because the whole profit in the crop would be eaten up in storage charges.

TUESDAY AFTERNOON'S SESSION.

Mr. A. B. Wolvin opened the session on Tuesday afternoon and submitted some invaluable figures to the commission concerning the operation of the Swedish vessels in his line known as the Great Lakes & St. Lawrence Transportation Co. These figures are a revelation and show that the cost of operating the Swedish steamers is fully 40 per cent lower than the cost of operating American vessels of similar tonnage in the company. Mr. Wolvin said that he thought within five years Winnipeg would be the wheat center of the world. He referred to the great strides which Canada is making both in the production and transportation of grain and thought that some reciprocal arrangement with that country would be advantageous to the United States, though he did not outline his views upon this subject in detail. He said that they are booking trade now via the St. Lawrence at rates equivalent to those which obtained at Philadelphia and he thought eventually the grain would go to Europe via the Canadian route.

Mr. R. K. Masten, on behalf of the United Trades and Labor Council, made an earnest plea in favor of the upbuilding of the American merchant marine, but hoped that too much would not be paid for it. He appreciated that undoubtedly it would do a common good but felt that it should not be secured at too great a cost.

Mr. Robert Bandlow said that he believed it to be the consensus of the opinion of labor that it was opposed to subsidies in any form. Protection he declared had so nurtured infant industries that they had become a menace to the country and that within the past few months the president had taken measures to move against them. He said that capital was international and was usually arrayed against the people. If anything at all was done he thought that the shipping industry should be nationalized and that those whose occupation it is to man guns on other ships with eventual murderous intention should be taken off them and put to better uses on ships engaged in the arts of peace.

When he had done, Senator Gallinger stated that ship builders and ship owners who had appeared before the commission in the east were a unit in holding that they could not operate ships under the American flag even if they were admitted free owing to the higher cost of operation. He also doubted whether free trade had conferred the blessings upon Great Britain that were reported and thought that the single instance that in the city of Leeds, numbering 300,000 persons, not a single workingman owned his own home, refuted the doctrine of the blessings of free trade.

Mr. Van Druver of the Brotherhood of Iron Ship Builders and Boiler Makers of America submitted an address which he begged the secretary to read. It will be published later in the Review.

Mr. F. E. Case of the Harvard Co. of Canton, makers of dental chairs, which ships its products in small quantities to all parts of the world, related the difficulties which his company had experienced in getting rapid transit abroad. He said that there seems to be no continuity of line to a remote country; that while it is possible for an American manufacturer to ship over his home railway to connecting lines to any part of the United States, it is impossible to get any continuity whatever beyond the foreign receiving port. This lack of well-developed transportation lines abroad has driven the small shipper to employ forwarding agents. It is found that the foreign forwarding agent, no matter how honorable a person he may be, is naturally inclined to favor the products of his own country. He mentioned the fact that at one time they had sent a shipment to Hamburg without employing a forwarding agent with the result that the shipment was actually sold for customs dues and that neither shipper nor consignee were ever able thereafter to get any trace of it. He thought that a fleet of American-built ships, American owned and American made, would be a great step in the extension of American trade abroad. It would result in the formation of foreign connection which could not result otherwise than in the development of commerce. He added that in endeavoring to reach a remote country it was frequently his custom to ship to London because he found that by so doing he got the

greatest dispatch, notwithstanding the circuitous route which the goods took in order to reach their destination.

Mr. F. F. Prentiss of the Cleveland Twist Drill Co. submitted some very valuable evidence. He said that he and a companion had on one occasion left New York and hunted the American flag and American whale jointly. They passed across the Atlantic and through the Mediterranean, through Suez, through the Red Sea, through the Indian Ocean and came to Hong Kong before they ever saw a single American steamer. Some days later they saw an American whale and concluded that they had achieved the objects of their hunt. Mr. Prentiss then stated that he had gone around the world three times and could not recall ever having seen the American flag while crossing the various seas. As a manufacturer he is interested in the development of the South American market and has paid personal visits to the South American countries and has discovered that the great obstacle to the growth of American trade there is the transportation problem. All goods destined for the South American market have to be shipped via Europe and any orders which the South Americans desire to make in this country have to be sent via Europe. The wants of the great South American continent are approximately $800,000,000 annually, and the United States is excluded absolutely from this trade for the want of transportation. On behalf of the American manufacturer and artisan he urged the subsidizing of a steamship line plying to the South American countries.

Mr. Walter D. Sayle of the Cleveland Punch & Shear Works and the Cleveland Trust Co. made a very earnest plea in favor of aid to shipping, which will be published in full in the Review later.

GRAPHIC TALK BY ALEXANDER E. BROWN.

The commission was favored with a talk from Mr. Alexander E. Brown of the Brown Hoisting Machinery Co. Mr. Brown in answer to a question from Senator Gallinger stated that the equipment manufactured by his company handled 50 per cent of the coal on the docks of the great lakes and 90 per cent of the ore. He spoke also of the difficulties which an American manufacturer has to contend with in his endeavor to extend his operations abroad and mentioned an instance wherein his company had been subjected to $9,000 demurrage on an order and had through circumstances beyond their control lost very desirable customers thereby. He said there seemed to be no uniform rate per ton for handling freight in foreign countries. He also stated that notwithstanding the depressed condition of the shipping trade in general in this country, a company was in process of formation to engage in the shipping business with especial reference to terminals and stood ready to invest from two to three million dollars in the enterprise. This company is apparently more of a terminal company than a shipping or ship owning concern. Mr. Brown represented that if the ships engaged in the over-sea carriage, no matter what their product, were constructed with some relation to unloading facilities, that an excellent profit could be extracted from the business. He thought that good sense and not precedent should be the guiding motive in ship designing and construction and declared that for 500 years there had been no practical advance in the manner of handling freight in over-sea trade. He said that for a number of years he had made a study of handling equipment with special reference to all forms of manufacture in the foreign trade and believed that no field was more attractive today to the capitalist because it was practically a virgin field. The coast ports, including New York, he believed to be hundreds of years behind the times in this matter of cargo dispatch. As an illustration of the economy which has been obtained in the handling of freight on the great lakes he stated that one man in Conneaut removes 3,000 tons of iron ore from a steamer in ten hours. Of course, he is aided in doing this by machinery which has cost great sums of money, but it nevertheless pays a very good interest on the investment, and he believed the same opportunity for profitable handling obtained on the coast.

This concluded the first day's session in Cleveland.

THE SESSION OF WEDNESDAY MORNING.

The sessions of the commission were concluded in Cleveland on Wednesday morning. Mr. W. H. Hunt, president of the Builders' Exchange, said that the great national asset was the American spirit of enterprise and believed that unlimited success would attend the American merchant marine if the government should come now temporarily to its aid. Mr. F. H. Haserot also urged the commission not as a shipper but as a citizen, to do something for the American merchant marine.

Mr. Calvary Morris of the Morris Coal Co. declared that no one should be frightened by the word subsidy and that the fight should be fought out along that line. He said that the great northwest had been developed by subsidies granted to the railroads, that that fact was well-known and was appreciated. He then referred to the remarks made by Mr. J. C. Wallace the preceding day and believed it to be the point of wisdom on the part of the American manufacturer to sell some of his surplus abroad at a loss. In these days of great enterprises profit is made upon the volume of business. He applied Mr. Wallace's remarks to his own trade with the northwest, declaring that it was unprofitable to mine coal simply for the limited market which obtains in this section of the country and that it was found desirable to ship a portion of it into the northwest territory and dispose of it there at an actual loss. His point was that the greatest economy was obtained through the maximum of product and that therefore it was more profitable to produce a great volume even if a part of it had to be disposed of subsequently at a loss, rather than produce a small volume with the hope of getting a high price for all of it. He declared it to be a fallacy also to think that capital comes from Wall street. Capital really comes from the masses. He related that the banks of Cleveland have 120,000 depositors with sums ranging from one dollar to the tens of thousands and it is this money which is developing the resources of the country. He advised the commission to call in the presidents of the various trunk lines and enlist their support. They are engaged solely in the transportation business and would be better equipped to extend their lines out into the high seas than any private concern. This he believed to be the surest method of obtaining an adequate merchant marine and added that when once ocean lanes had been established and had proved successful, private capital would speedily follow in the venture.

Mr. Sam W. Meek, business manager of the Leader, followed and also advocated calling a spade a spade. He did not think that the word subsidy was the bugaboo that some people believed it to be. He desired the commission to remember that the great victory in Ohio last fall was won upon the shipping platform—that Senator Hanna repeatedly told the people not to return him to the senate if they did not want him to vote for a shipping bill, on which platform also the legislature was overwhelmingly Republican.

Col. J. J. Sullivan of the Central National bank delivered an excellent address, the value of which was much improved by the impressive manner in which he delivered it. It will be given in full in the Review later.

David Armstrong, a Newburg iron worker, said that he had been in the harness for forty years. He disclaimed that there was any warfare between capital and labor, maintaining that when the capitalist was prosperous the laborer was prosperous also. He was earnestly in favor of upbuilding the American merchant marine by legitimate means.

Mr. Tom Fitzsimons made a violent speech against any form of subsidy whatever, saying that if any business in the country could not live without assistance, it should be permitted to die.

MR. HARRY COULBY GREATLY IMPRESSED THE COMMISSION.

No man impressed the commission more than Mr. Harry Coulby, president and general manager of the Pittsburg Steamship Co. Mr. Coulby spoke entirely without notes, but with great ease and precision and with complete mastery of the subject in hand. His voice and manner and the clearness of his views contributed to an effect that kept the members of the commission closely intent upon every word that he said. He began by saying that Talleyrand, the master of old-time diplomacy, held that language was made to conceal thought. This view has been completely reversed by our latest and greatest diplomatist who holds that language was made to express thought. He thought that John Hay had revolutionized the art of diplomacy. He then referred to the efforts of Cleveland's prominent business man, the late M. A. Hanna, who went to the senate with a notion that the national government should invest its own money and direct its own affairs precisely as a business man would direct his. He referred to Mr. Hanna's study of the Panama question and the manner in which he had convinced not only the United States senate but the whole country as well that the Panama route was the sensible and business-like route for the construction of the Isthmian canal. Then was the business man applying business methods to a business question. He thought the thing to do was to ascertain what is the matter with the merchant marine purely as a business problem. It is merely, of course, a means to an end—to connect the consumer with the producer. He did not believe in the theory that each country should consume what it produces and considered that its error could be perceived by reducing it to single business. Take the poultry business for instance. The poultry man could not possibly eat all the eggs he produces, but when the magic wand of transportation is produced, the eggs of the poultry man can be exchanged for the bacon of another producer. Mr. Coulby hoped to see the time when the Chinaman would lay aside his chop sticks and make his breakfast of American buckwheat cakes.

He referred to the fact that a number of speakers had stated that the lake trade was subsidized. He was inclined to resent that statement because he did not believe that the people of the great lakes region had gotten any more out of it than the people of the whole country, and he did not think that if the carriage of American products oversea was subsidized that those directly concerned in it would get any more real benefit than the people in the lake region. It is not so long ago since anthracite coal was displayed in the northwest in a cabinet merely as something that was produced in New York and Pennsylvania and burned in those states. Anthracite coal is now delivered in the northwest at a lower rate per ton than any citizen in Cleveland would have to pay to transfer it from the sidewalk to the cellar of his home. Transportation has done this. It has done more than this because the coal itself has been followed by base burners and by a great variety of other things.

"Everyone has agreed," said Mr. Coulby, "that the merchant marine is very sick. It has dwindled from 85 per cent to 8. We have all looked at him in his little bed and we have all concluded that he is very sick. I don't know that I have seen many prescriptions to remedy his condition. What we should be after is the enlargement of our markets; but before we can sell our products abroad we have got to get the stuff there. Eight years ago I was coming home from England and on the steamship met two traveling men who were agents for steam shovel and mining machinery manufacturers. They were very much discouraged. They had been attempting to introduce these products in South America and South Africa and had run up against the question of transportation, and the fact that the business had to be transacted through London. The circuitous system and the necessity of exchange robbed the business of all profit.

"Transportation between consumer and producer is a science. Railroad men agree that it must be carried on in a straight line. The moment you stop a ton of freight you add to its cost. The cost may be imperceptible but it is nevertheless accumulating. Three times in my twenty years of experience on the lakes I have seen traffic blocked. I have seen the elevators at Chicago, at Duluth, at Buffalo running over; I have seen ships and cars absolutely stalled and unable to move a pound of freight. Why? Waiting for the tramp steamer. What is wanted is an absolutely straight connection with the foreign market. This question is a transportation question pure and simple and the remark that Mr. Morris made a little while ago is the key to the whole problem. Get the railroad presidents together and see what they can do. They have spent all their lives in studying this question of transportation. They have agents scouring every portion of the country for business and it cannot escape them. Have them see what they can do toward extending their lines out to the ocean.

"If under our system of life it costs more to operate an American ship on the high seas, let the American people put up the difference. Protection exists everywhere. It is a part of our private life. A man protects his home from fire by insurance and his family in various ways. We should extend protection to the ship because it would redound to the benefit of all.

"The American sailor won't work for Swedish wages. Then let us put a strip on his hat reading 'United States naval reserve,' and pay him the difference. We would then have a claim on his services in case of war. Other countries do it and we are not to be blamed if we fight them with their own weapons. I repeat again that this question is one of transportation purely. If you can assist in establishing a few lines to stratagetic points in various parts of the world. American business methods would solve this question much sooner than we would expect. And, gentlemen, you will have to do it. If you don't do it now you will have to do it later. It's the nation's life. If you don't do it you will find that our commerce will simply back water on us and that eventually you will be compelled to do it."

Mr. Coulby was greeted with applause from every member of the commission when he had finished, a compliment which was paid to no other speaker. His testimony concluded the hearing in Cleveland, and Senator Gallinger took occasion to say that the commission had been favored with highly interesting and original evidence in Cleveland, and that he believed it to be as well the most important that had been submitted to the commission thus far.

During the stay of the commission in Cleveland they were well entertained by the business men. A dinner was given to them at the Country Club on Tuesday evening, and as opportunities afforded they were shown the interesting points about the city.

WANTED.

Capstan Wanted.

Good second-hand steam capstan wanted. Give price and location. Address Box 68, Marine Review, Cleveland. July 21

PROPOSAL FOR CONSTRUCTION OF BREAKWATER.—U. S. Engineer Office, 262 Huron Street, Cleveland, Ohio, June 18, 1904. Sealed proposals for constructing the East Breakwater at Black River (Lorain) Harbor, Ohio, will be received at this office until 2 P. M., July 18th, 1904, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. DAN C. KINGMAN, Major, Corps of Engineers, U. S. Army. July 14

U.S. Engineer Office, 1637 Indiana Ave., Chicago, Ill., June 25, 1904. Sealed proposals for dredging in Ca umet River, Ill., will be received here until 12 noon, July 26, 1904, and then publicly opened. Information on application. O. H. ERNST, Col., Engineers. July 21

WANTED and FOR SALE Department.

FOR SALE.

Steam Barge J.G. Nichols.

Length 106 ft., beam 22 ft.
Engine 10 by 20 by 11.
Boiler 8 ft. 6 in long, 48 in. dia.
Steam pressure 137 lbs.
Engine and boiler in first-class shape. Steam hoister and derrick forward.
Will sell cheap to quick buyer.
Address Walter V. Metcalf, 93 Eliot St , Cleveland. July 7

Launch Flora for Sale.

For Sale—The handsome gasoline cruising launch Flora. Length 36 ft.. standing top and cabin; cherry finish; electric lights; a 25 H. P. 4-cylinder Leighton engine; outfit as good as new; speedy, seaworthy and comfortable; at a decided bargain. Edward Oswald, Syracuse, N. Y. June 30

FOR SALE.

Scow for Sale.

Large scow Koal Kabin, with one automatic Scotch four-drawer deck hoist aft, one American two-drawer deck hoist forward; with derricks and attachments for each hoist. One 6-in. ballast steam pump aft; one 9 in. windlass pump forward. New decks and beams. New Scotch boiler furnishes steam sufficient to operate pumps or hoists. Price $1,300. Come and look her over at Port Huron. R. P. Thompson, Port Huron, Mich. tf

Yacht for Sale.

New beautiful 100-ft. steam yacht, fully equipped. Owner physically unable to use yacht. Will sell for any reasonable offer. Yacht can be seen in Detroit. Address M. J Steffens, 57 East Twenty-second st., Chicago. tf

FOR SALE.

Dump Scow for Sale

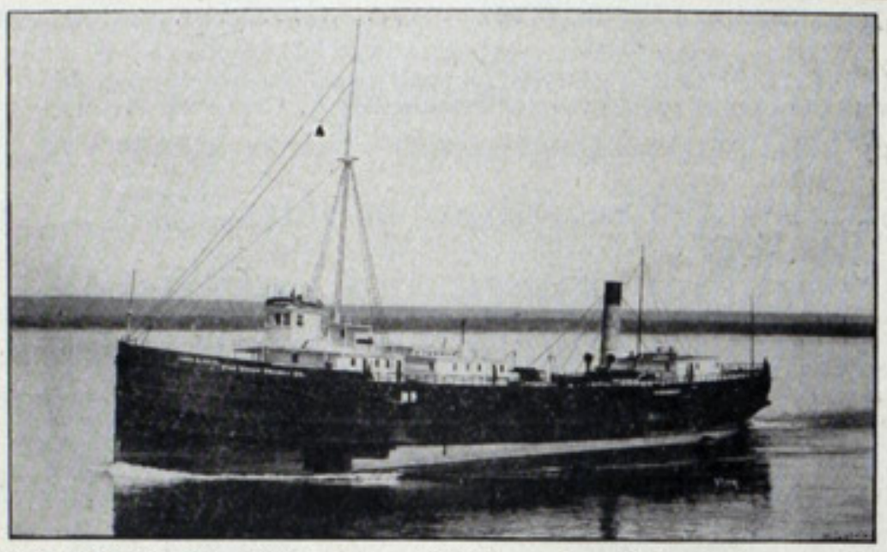
Built of full length fir timber, 264 yards For particulars enquire of Hickler Bros., Sault Ste. Marie, Mich. tf

Yacht for Sale.

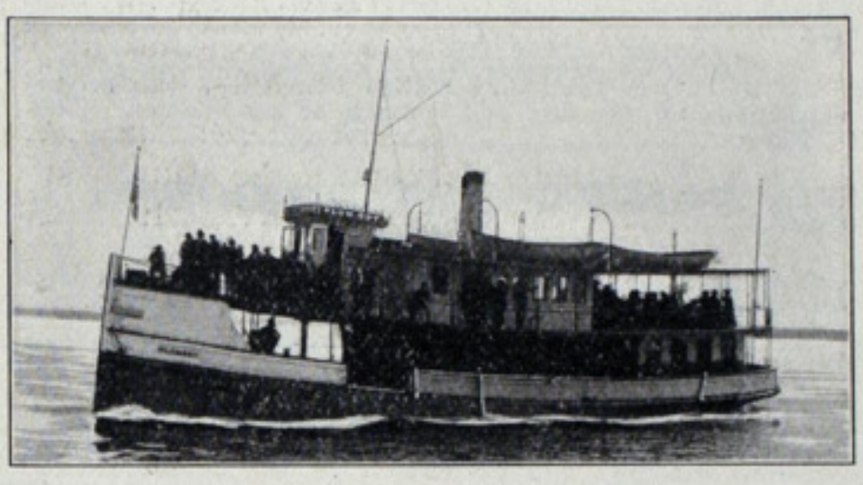
Yacht, perfect beauty, for sale at $1,350; length, 40 ft.; beam, 7 ft. Draught aft about 34 in., forward about 9 in amidships about 18 in. For full particulars address Box 76, Marine Review, Cleveland. tf

For Sale.

All my stock in the Chequamegon Bay Transportation Co., 75 shares; good established business Reason for selling—going west. Address, Box 343, Ashland Wis. July 28



FOR SALE—The Union Transit Co.'s package freight steamer John M. Nichol. Rated A1½; length 263 ft., beam 41 ft , depth 26 ft. Triple expansion engines with 900 indicated H. P Steel boiler house enclosing two Scotch boilers with steam pressure of 150 lbs. Steam capstans, windlass and steering apparatus. About $30 000 laid out for repairs in the past year. Retiring from business and will sell at sacrifice. Address H. C French, 994 Ellicott Square, Buffalo, N. Y. June 16



FOR SALE—Steamer Plow Boy. 83 ft. long, 21 ft. beam, double compound engine. Allowed 269 passengers Good established business at Houghton, Mich Cheap for cash. Prefer to trade for Fishing Tug and Outfit. Dormer Boutin Fish Co., Bayfield, Wis. July 14

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FOR SALE — Length 78 ft., beam 18 ft , triple expansion engines, water tube boiler, allowed 200 lbs ; electric light, search light, mahogany deck house 9 by 16, power launch, complete outfit, all in first-class condition. One of the best family cruising yachts on the Lakes Inquire Wickes Bros , Saginaw, Mich. July 7

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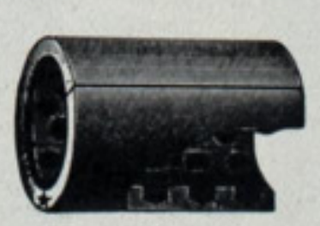

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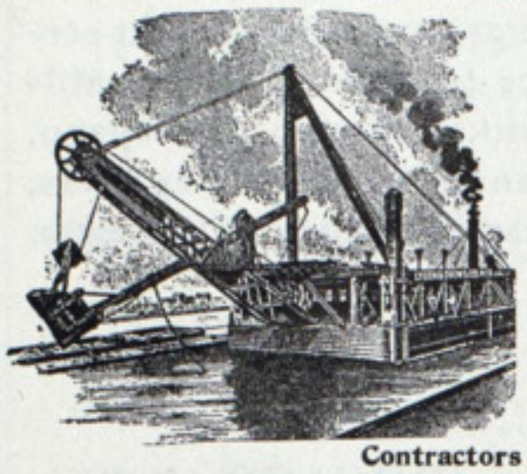

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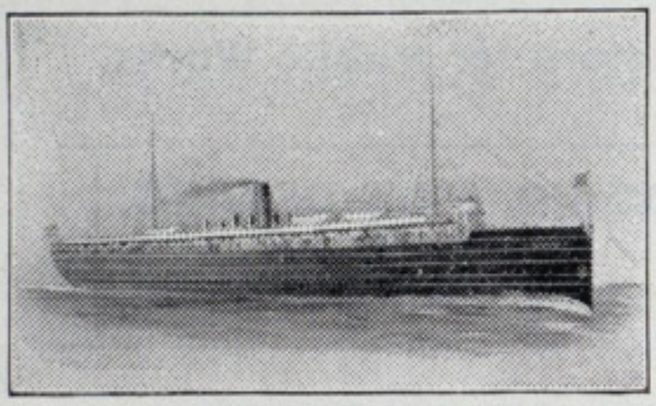

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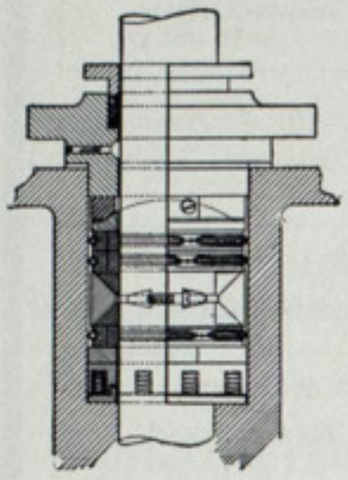

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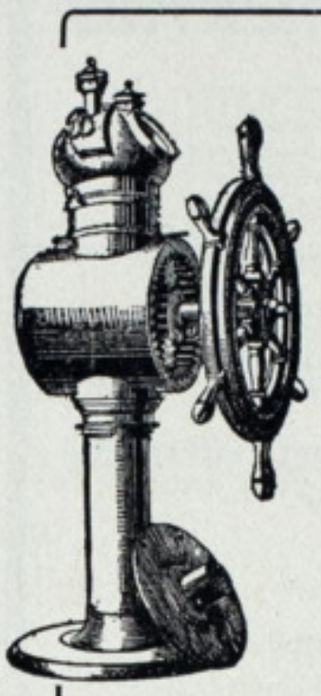

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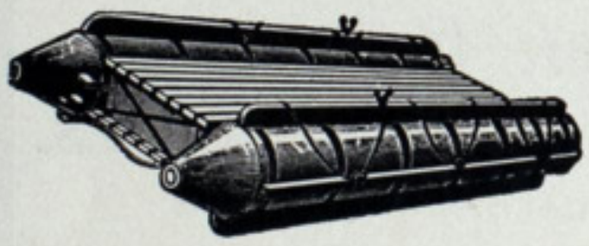

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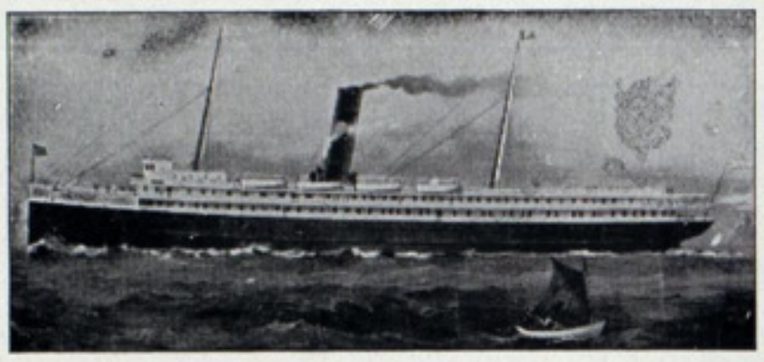

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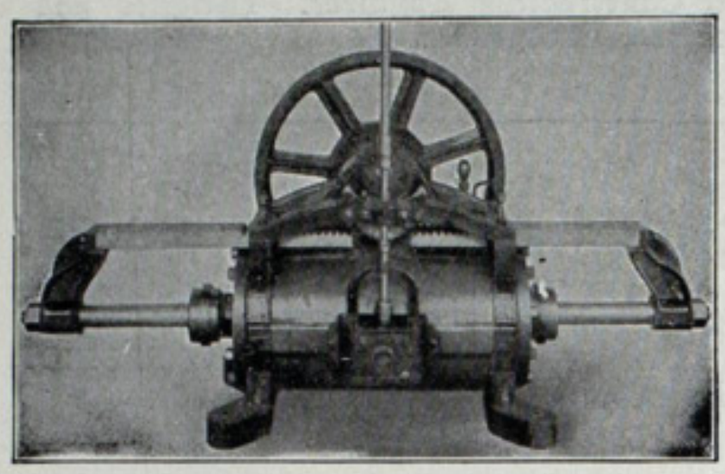

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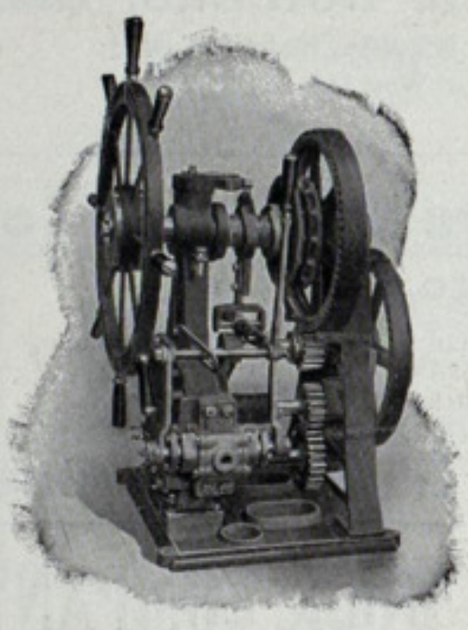

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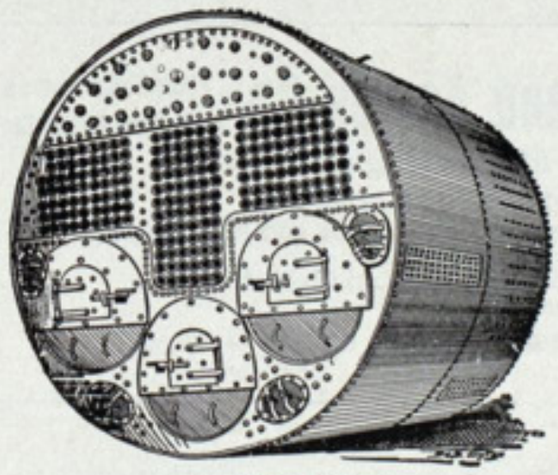

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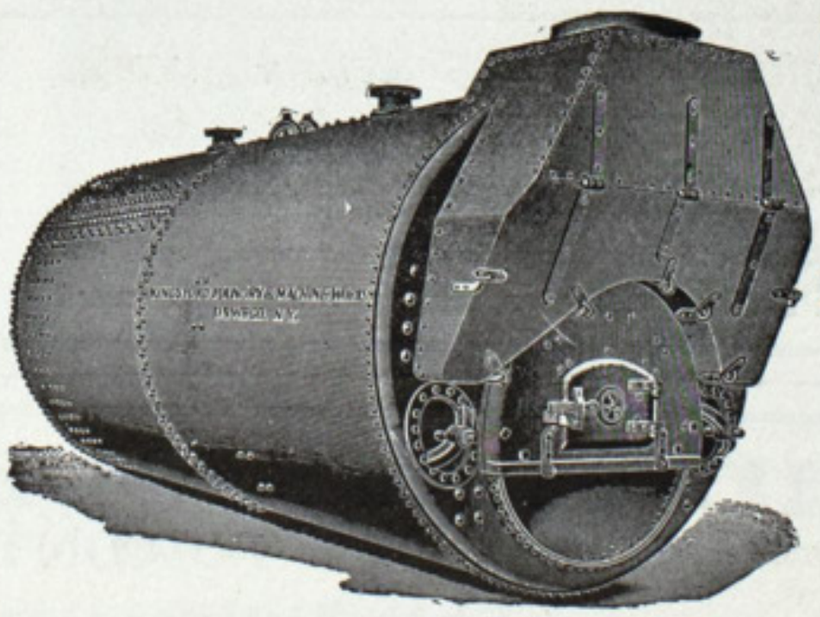

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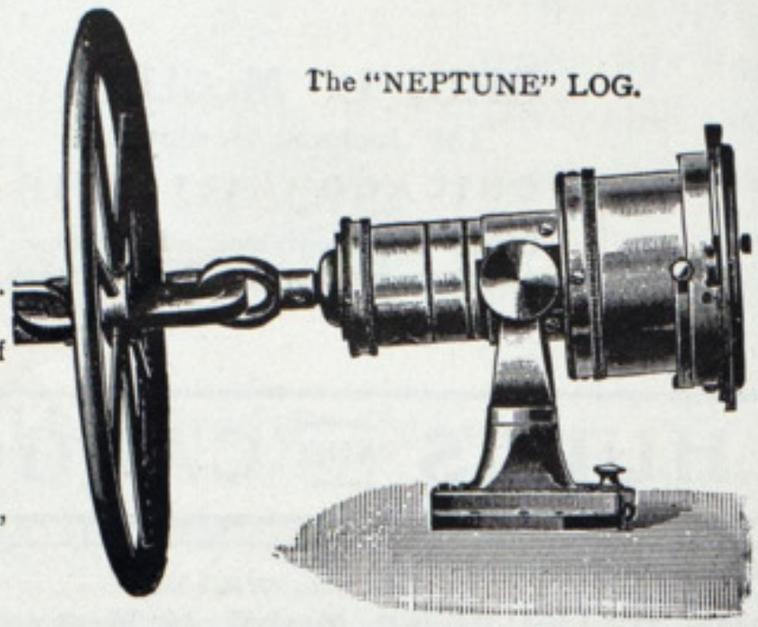

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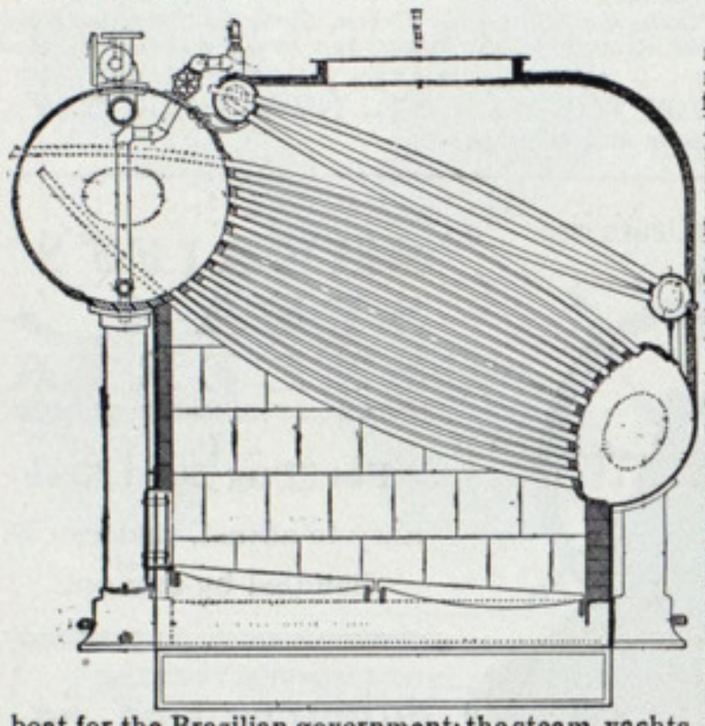

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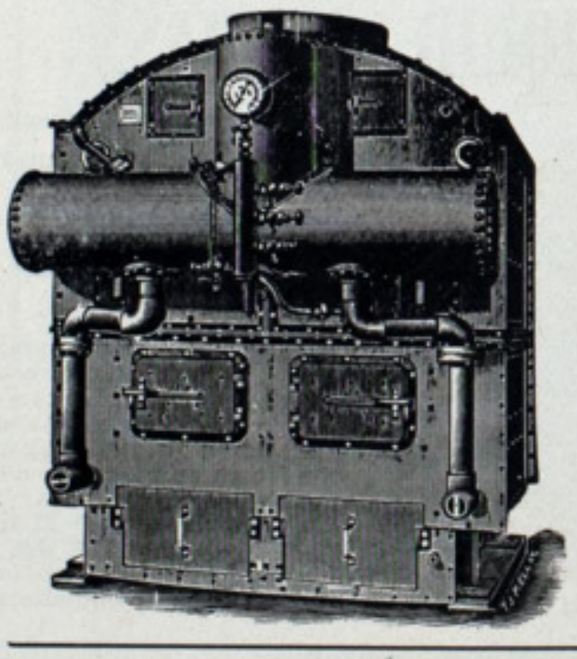

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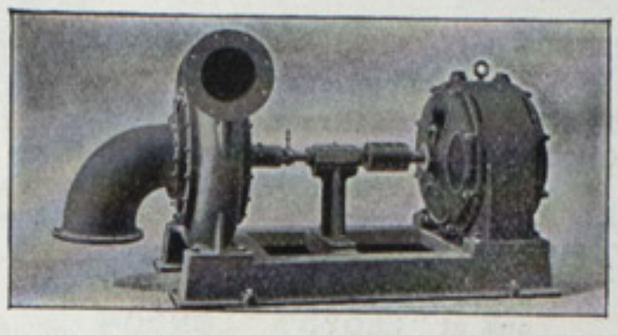

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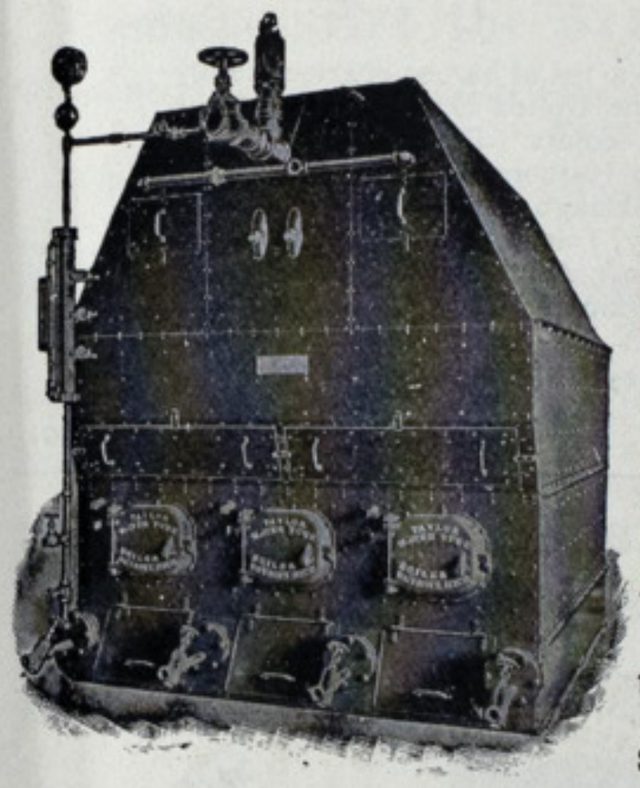

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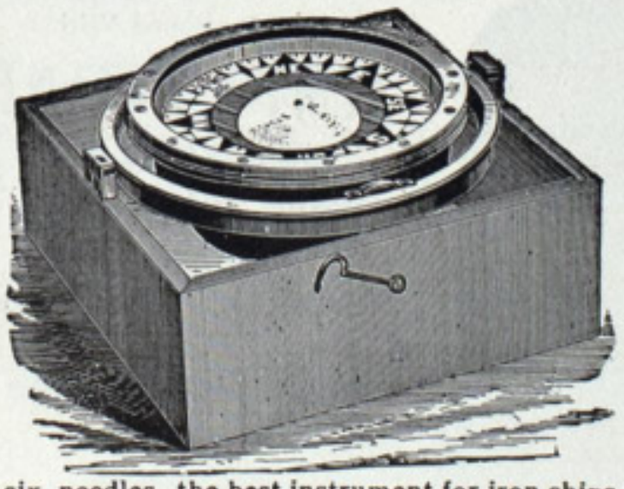

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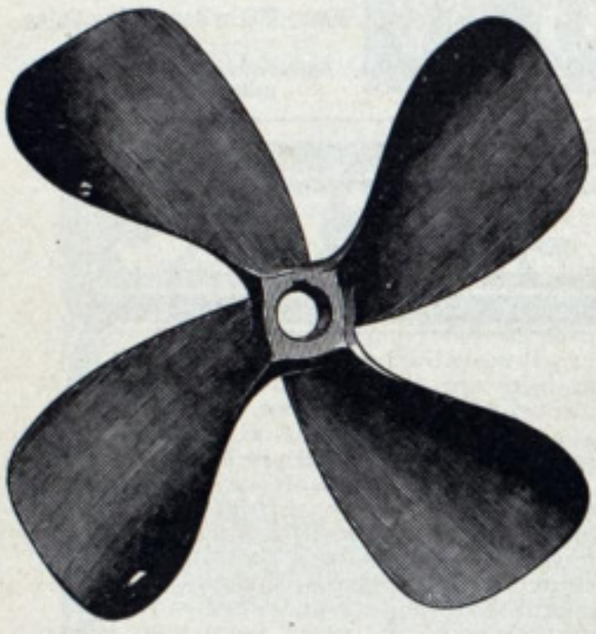

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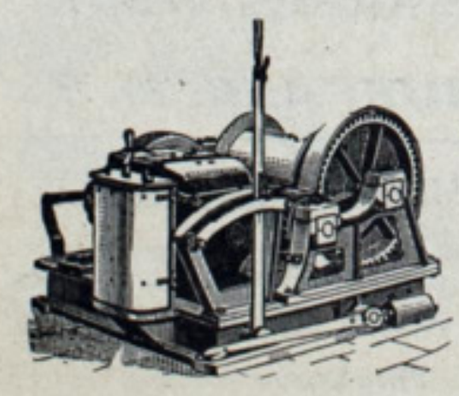

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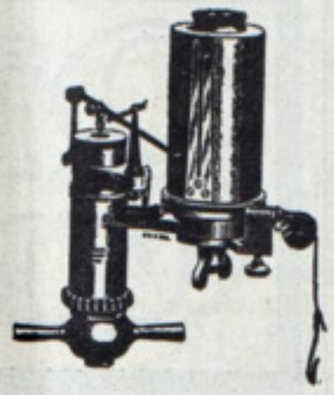

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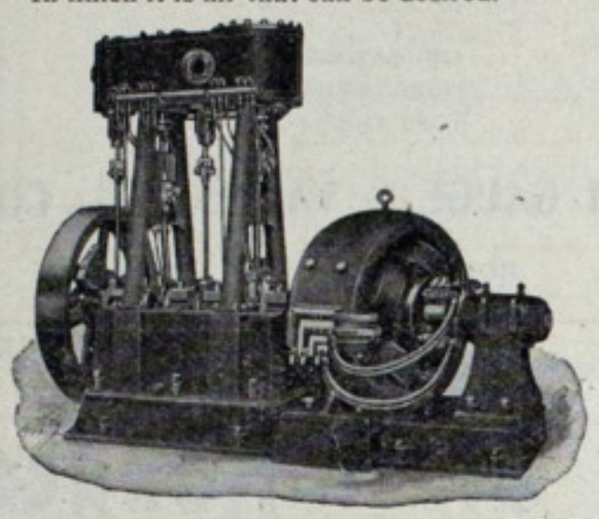

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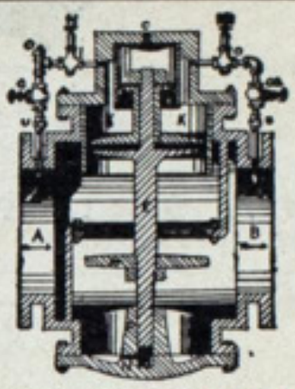

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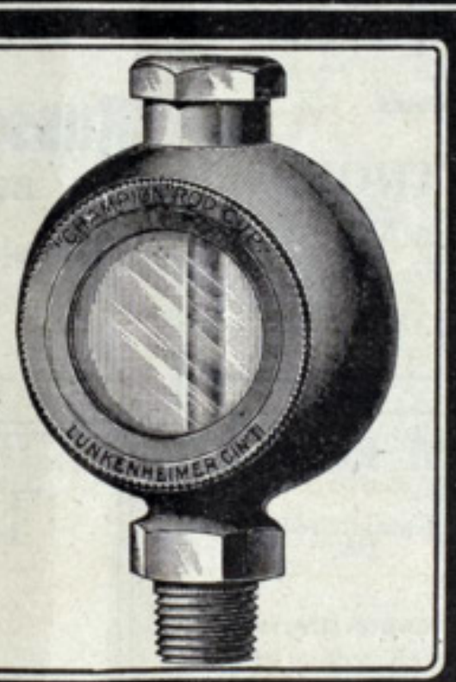

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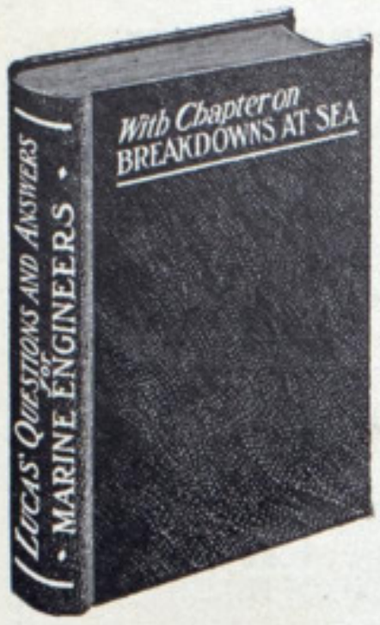

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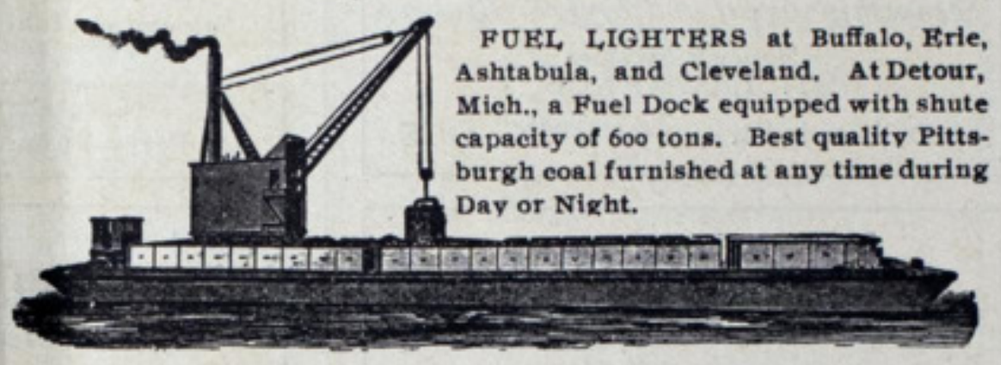

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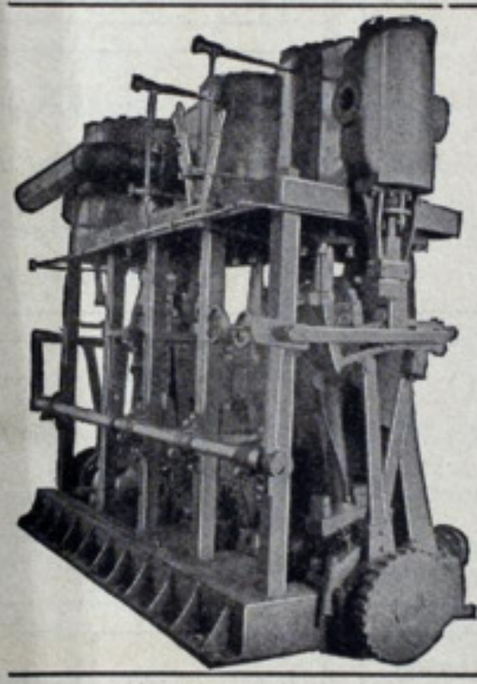

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Hall Bros. .....Philadelphia.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Mietz, Aug. .....New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
Roach's Ship Yard .....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.
United States Ship Building Co....New York.
Willard, Chas. P. & Co.....Chicago.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

Cory, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co.....Chicago.
Kieley & Mueller .....New York.
Lurkenheimer Co. .....Cincinnati.
Mooers & Co., H.....Milwaukee.
New York Belting & Packing Co..New York.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Hynd, Alexander .....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, Joseph .....Duluth, Minn.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Pittsburg Testing Laboratory, Ltd...Pittsburg.
Rice, Henry .....Buffalo.
Roelker, H. B.....New York.
Sadler, Perkins & Field.....New York.
Steel, Adam .....Cleveland.
Wood, W. J. .....Chicago.

FANS FOR VENTILATION, EXHAUST, ETC.

Sturtevant, B. F. Co.....Boston.

FEED WATER PURIFIERS AND HEATERS.

Ross Valve Co.....Troy, N. Y.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

FORGES.

Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co....Cleveland.
Fore River Ship & Engine Co..Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons .....Cleveland.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

FUELING COMPANIES AND COAL DEALERS.

Hanna, M. A. & Co.....Cleveland.
Ironville, Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Picklands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit,
Smith Coal & Dock Co., Stanley B.Toledo, O.

GASKETS, RUBBER.

New York Belting & Packing Co..New York.

GAS BUOYS.

Safety Car Heating & Lighting Co..New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co.....Cleveland.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Reliance Mfg. Co..... City Island, New York.

GAUGES, STEAM AND VACUUM.

American Steam Gauge & Valve Mfg. Co.
..... Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.
Standard Gauge Mfg. Co.....Svracuse, N. Y.

GAUGES, WATER.

Bonner & Co., Wm. T.....Boston.
Lunkenheimer Co. .....Cincinnati, O.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

GRAPHITE.

Dixon Crucible Co., Joseph..Jersey City, N. J.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Boston.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.)....
..... Cleveland.
Chase Machine Co.....Cleveland.
Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Hyde Windlass Co.....Bath, Me.
Lidgerwood Mfg. Co.....New York.
Marine Iron Co.....Bay City.
Mietz, Aug. .....New York.
Pawling & Harnischfeger .....Milwaukee.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co...Cuyahoga Falls, O.

HOSE, RUBBER.

New York Belting & Packing Co..New York.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.

Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.

INJECTORS.

American Injector Co.....Detroit.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co. .....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.

Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H.....Chicago.
Frankfort Marine, A. & P. G. Ins. Co....
..... New York.

INSURANCE, MARINE—Continued.

Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F..New York & Chicago.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Voss, F. D.....New York.
Weeks, F. H.....New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co.....Cleveland.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Georgian Bay Engineering Works.....
..... Midland, Ont.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Chicago.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D. .....New York

LIGHTS, SIDE AND SIGNAL.

Russell & Watson .....Buffalo.

LOGS.

Walker & Sons, Thomas ....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.

Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

LUMBER.

Martin-Barriss Co.....Cleveland.

MACHINISTS.

Chase Machine Co.....Cleveland.
Gogebic Steam Boiler Works....Duluth, Minn.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Union Machine & Boiler Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros. .....Sault Ste. Marie, Mich.

MARINE GLUE.

Ferdinand & Co., L. W.....Boston, Mass.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works ..Detroit.
Sturtevant, B. F. Co.....Boston.

MELTING POT AND PAYING LADLE.

(For Paying Seams of Decks with Marine Glue.)

Ferdinand & Co., L. W.....Boston.

METALLIC PACKING.

Katzenstein, L. & Co.....New York.
U. S. Metallic Packing Co.....Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co.....Boston

MOTORS, GENERATORS—ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Boston.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

Buyers' Directory of the Marine Trade.—*Continued.*

NAUTICAL INSTRUMENTS.
Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.
Hynd, Alexander .....Cleveland.
Kidd, Joseph.....Duluth, Minn.
Lovejoy, H. O.....Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Sadler, Perkins & Field.....New York.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

OAKUM.
DeGrauw, Aymar & Co.....New York.
Stratford, Oakum Co.....Jersey City, N. J.

OIL FOR PAINTING.
Sipe & Co., James B.....Allegheny, Pa.

OIL ENGINES.
Mietz, Aug. .....New York.

OILS AND LUBRICANTS.
Dixon Crucible Co., Joseph..Jersey City, N. J.
Standard Oil Co.....Cleveland.

PACKING.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
New York Belting & Packing Co...New York.
United States Metallic Packing Co. Philadelphia.

PACKING TOOL.
Matteson & Drake .....Philadelphia.

PAINTS.
Baker, Howard H. & Co.....Buffalo.
Detroit Varnish Co.....Detroit.
Detroit White Lead Works.....Detroit.
Forest City Paint and Varnish Co..Cleveland.
New Jersey Zinc Co.....New York.
Sipe & Co., James B.....Allegheny, Pa.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.. ..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Parker Bros. Co., Ltd.....Detroit.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H...Milwaukee.
Sullivan, M. .....Detroit.

PIPE, WROUGHT IRON.
Bourne-Fuller Co.....Cleveland.
Crane Co. .....Chicago.
Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.
Bourne-Fuller Co. .....Cleveland.
Otis Steel Co.....Cleveland.

PNEUMATIC TOOLS.
Allen, John F.....New York.

POLISH FOR METALS.
Bertram's Oil Polish Co.....Boston.

PRESSURE REGULATORS.
Kieley & Mueller .....New York.
Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.
American Ship Building Co.....Cleveland.
Atlantic Works .... East Boston, Mass.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.. Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
Phosphor Bronze Smelting Co., Ltd..... ..... Philadelphia.
Roelker, H. B.....New York.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp & Sons Co., J. E.....Trenton, N. J.
Trout, H. G.....Buffalo.
United States Ship Building Co....New York.

PROJECTORS, ELECTRIC.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... ..... Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.
Blake, Geo. F., Mfg. Co.....New York.
Great Lakes Engineering Works Detroit.
Kingsford Foundry & Machine Works.... ..... Oswego, N. Y.

PUNCHES, RIVETERS, SHEARS.
Allen, John F. .....New York.

RANGES.
Russell & Watson .....Buffalo

REFRIGERATING APPARATUS.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.
Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping.. .....New York.

REPAIRS—ENGINE AND BOILER.
(See also Boiler Manufacturers and Engine Builders.)
Georgian Bay Engineering Works..... .....Midland, Ont.
Gogebic Steam Boiler Works....Duluth, Minn.
Forest City Boiler Co.....Cleveland.
Marine Iron Co.....Duluth, Minn.

RIVETING MACHINES.
Allen, John F.....New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.
Bourne-Fuller Co.....Cleveland.

SAFETY VALVES.
American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.
Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co.....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.
See Wrecking Companies.

SEARCH LIGHTS.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... .....Pittsburg, Pa.

SHEARS.
See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.
Bourne-Fuller Co.....Cleveland.
Otis Steel Co.....Cleveland.

SHIP BUILDERS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd.Toronto, Can.
Buffalo Dry Dock Co.....Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
Roach's Ship Yard .....Chester, Pa.
Shipowner's Dry Dock Co.....Chicago.
Smith & Son, Abram.....Algonac, Mich.
United States Ship Building Co..New York.
Willard, Chas. P. & Co.....Chicago.

SHIP CHANDLERS.
Baker, Howard H. & Co.. .....Buffalo.
Marine Mfg. & Supply Co. .....New York.
Upson-Walton Co.....Cleveland.

SHIP LANTERNS AND LAMPS.
Russell & Watson .....Buffalo.

SHIP TIMBER.
Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.
Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.
Elwell, Jas. W. & Co.....New York.
Gilchrist & Co., C. P. .....Cleveland.
Holmes, Samuel .....New York.
Lester, S. S.... ..... Quebec, Can.
McCarthy, T. R.....Montreal, Can.
Weeks, F. H.....New York.

STEAMSHIP LINES, PASS. AND FREIGHT.
American Line .....New York.
Anchor Line .....Buffalo.
Cleveland & Buffalo Transit Co.....Cleveland.
Erie & Western Trans. Co.....Buffalo.
Goodrich Trans. Co.....Chicago.
International Mercantile Marine Co..... ..... Philadelphia.
Manitou Steamship Co.....Chicago.
Mexican-American S. S. Co..New Orleans, La.
New York & Cuba Mail S. S. Co..... New York.
Niagara, St. Catharines & Toronto Ry. & Nav. Co. .....St. Catharines, Ont.
Northern Michigan Trans. Co.....Chicago.
Red Star Line .....New York.
Richelieu & Ontario Nav Co. ...Montreal, Can.
United Fruit Co .....Boston.

STEEL CASTINGS.
Macbeth Iron Co.....Cleveland.
Otis Steel Co.....Cleveland.
Seaboard Steel Casting Co.....Chester, Pa.

STEERING APPARATUS.
American Ship Building Co.....Cleveland.
Chase Machine Co.....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Marine Mfg. & Supply Co.....Cleveland.
Moulton Steering Engine Co.....New York.
Pawling & Harnischfeger .....Milwaukee.
Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.
Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.
Gaskin, Edward .....Buffalo.
Hynd, Alexander .....Cleveland.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Parker Bros. Co., Ltd.....Detroit.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

TESTS OF MATERIALS.
Hunt, Robert W. & Co.....Chicago.
Pittsburg Testing Laboratory, Ltd....Pittsburg.

TILING, INTERLOCKING RUBBER.
New York Belting & Packing Co...New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.
Allen, John F.....New York.
Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.
Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.
American Ship Windlass Co..Providence, R. I.
Chase Machine Co.....Cleveland.

TOWING COMPANIES.
Donnelly Salvage & Wrecking Co..... .....Kingston, Ont.
Great Lakes Towing Co.....Cleveland.
Midland Towing & Wrecking Co., Ltd.... .....Midland, Ont.

TRAPS, STEAM.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Sturtevant Co., B. F., Jamaica Plain..Boston.

TRUCKS.
Boston & Lockport Block Co.....Boston.

TUBING, SEAMLESS.
Shelby Steel Tube Co.....Pittsburg, Pa.

Buyers' Directory of the Marine Trade.—*Continued.*

VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Ross Valve Co.....Troy, N. Y.

VALVES FOR WATER AND GAS.

Ross Valve Co.....Troy, N. Y.

VARNISHES.

Detroit Varnish Co.....Detroit.
Detroit White Lead Works.....Detroit.
Forest City Paint & Varnish Co....Cleveland.
New Jersey Zinc Co.....New York.
Also Ship Chandlers.

VENTILATING APPARATUS FOR SHIPS.

Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Boston.

VESSEL AND FREIGHT AGENTS.

Boland, John J.....Buffalo.
Brown & Co.....Buffalo.
Elwell, Jas. W. & Co.....New York.
Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H. .....Chicago.
Gilchrist & Co., C. P.....Cleveland.
Hall & Root .....Buffalo.

VESSEL AND FREIGHT AGENTS—Con.

Helm & Co., D. T.....Duluth.
Hawgood & Co., W. A.....Cleveland.
Holmes, Samuel .....New York.
Hutchinson & Co.....Cleveland.
Lester, S. S.....Quebec, Can.
McCarthy, T. R.....Montreal.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Weeks, F. H.....New York.

WATER GAUGES.

Bonner & Co., Wm. T.....Boston
Lunkenheimer Co. .....Cincinnati, O.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co.....Buffalo.
DeGrauw, Aymar & Co.....New York.
Upson-Walton Co.....Cleveland.

WHISTLES, STEAM.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.

WINDLASSES.

American Ship Windlass Co..Providence, R. I.
American Ship Building Co.....Cleveland.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Marine Mfg. & Supply Co.....New York.

WINCHES.

American Ship Windlass Co..Providence, R. I.
Georgian Bay Engineering Works..... .....Midland, Ont.
Hyde Windlass Co.....Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc.....Philadelphia.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co..... .....Kingston, Ont.
Great Lakes Towing Co.....Cleveland.
Midland Towing & Wrecking Co., Ltd... .....Midland, Ont.
Parker Bros. Co., Ltd.....Detroit.

YACHT AND BOAT BUILDERS.

Bertram Engine Works Co., Ltd..Toronto, Can.
Drein, Thos. & Son.....Wilmington, Del.
Georgian Bay Engineering Works..... .....Midland, Ont.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P. & Co.....Chicago.

YAWLS.

Drein, Thos. & Son.....Wilmington, Del.

ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW.

The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted.
The dagger (†) indicates that advertisement appears once a month.

*Allen, John F 3
Almy Water Tube Boiler Co ... 43
American Bureau of Shipping ... 44
American Injector Co 4
American Line..... 39
American Ship Building Co 11
American Ship Windlass Co 2
American Steam Gauge Co 45
Anchor Line 39
Armstrong Cork Co 56
Ashton Valve Co 14
Atlantic Works 41
†Atlantic Works, Inc 9

Babcock & Wilcox Co 8
Bayley & Sons Co., Wm 4
Baldt Anchor Co 55
Baker, Howard H., & Co.. 56
*Bertram Engine Works Co. Ltd. 41
Blake, Geo. F., Mfg. Co 14
Boland, J. J 48
†Bonner & Co., Wm. T .....
*Boston & Lockport Block Co.... 35
Bourne-Fuller Co 14
Bowers, L. M., & Co 55
Brown Hoisting Machinery Co., Inc 2
Buffalo Dredging Co 46
Buffalo Dry Dock Co 10

†Camden Anchor-Rockland Machine Co 13
Chase Machine Co..... 6
Chicago & Gt. L. Dredge & Dock Co 37
Chicago Ship Building Co 10
Cleveland City Forge & Iron Co . 47
Cleveland & Buffalo Transit Co.. 38
Continental Iron Works 2
*Contractors' Supply & Equipment Co 9
Cory, Chas. & Son 46
*Craig Ship Building Co 11
Cramp, Wm. & Sons, S. & E. B. Co..... 41
*Crandall & Son, H. I. 3
Crane Co..... 43-44

Dake Engine Co..... 42
Dearborn Drug & Chemical Wks 9
DeGrauw, Aymar & Co 47
Delauney, Belleville & Co 14
Delaware River Iron S. B. & E. Works 41
Detroit Ship Building Co..... 11
Detroit White Lead Works 2
Dixon Crucible Co., Joseph 46
Donnelly Salvage & Wrecking Co 44
Drien, Thos., & Son 40
Dunbar & Sullivan Dredging Co. 37

Elphicke, C. W., & Co 48
Elwell, Jas. W., & Co 48
Erie & Western Trans. Co..... 38

Falls Hollow Staybolt Co..... 47
Faust, Wm. H..... 48
Ferdinand & Co., L. W 4
Fields, Capt. J. M 49
Fitz-Simons & Connell Co 37
Fix's, S., Sons 46
Fleming & Co., P. H 48
Fletcher, W. & A., Co 41
Fogg, M. W 2
Fore River Ship & Engine Co.... 41
Forest City Boiler Co 46
Forest City Paint & Varnish Co . 42
Frankfort M. A. & P. G. I. Co 44

General Electric Co..... 14
*Georgian Bay Engineering Wks. 41
Gilchrist, Albert J 48
Gilchrist & Co., C. P..... 48
Gogebic Steam Boiler Works 41
Goodrich Trans. Co 38
Goulder, Holding & Masten 48
Great Lakes Engineering Works 5
Great Lakes Register 4
*Great Lakes Towing Co 11

Hall & Root 48
Hanna, M. A., & Co..... 47
Hawgood & Co., W. A 48
Helm & Co., D. T 48
Hickler Bros 37
Holmes, Samuel 48
Hoyt, Dustin & Kelley..... 48
Hunt, Robert W., & Co..... 49
Hutchinson & Co 48
Hyde Windlass Co 56
Hynd, Alexander 49

International Mercantile Marine Co..... 39
Ironville Dock & Coal Co..... 47

Jenkins Brothers 12
Jenks Ship Building Co..... 14

Kahnweiler's Sons, David 40
Katzenstein, L., & Co..... 40
Kidd, Joseph 49
*Kieley & Mueller..... 43
Kingsford Foundry & Machine Works 42
Kremer, C. E 48

Lackawanna Railroad 54
Lebanon Chain Works..... 46
Lester, S. S 48
Lidgerwood Mfg. Co 45
Lockwood Mfg. Co..... 41
Lovejoy, H. O 49
L. S. & M. S. Ry. 55
Lunkenheimer Co..... 46

McCarthy, T. R 48
McCurdy, Geo. L..... 44
†McNab & Harlin Mfg. Co.....
Macbeth Iron Co 56
MacDonald, Ray G..... 49
Manitowoc Dry Dock Co 41
Manitou Steamship Co..... 38
Marine Iron Co., Bay City, Mich. 47
Marine Iron Co., Duluth 41
Marine Mfg. & Supply Co 40
Martin-Barriss Co..... 43
Matteson & Drake.....40-49
Mexican-American S. S. Co..... 39
Midland Towing & Wrecking Co., Ltd 56
Mietz, Aug 6
Milwaukee Dry Dock Co 10
Mitchell & Co 48
Morse & Son, A. J 46
Mosher Water-Tube Boiler Co ... 43
Moulton Steering Engine Co 42

Nacey, James 49
Newport News Ship Building & Dry Dock Co 7
New Jersey Zinc Co 6
New York Belting & Packing Co. 4
New York & Cuba Mail S. S. Co.. 39
Niagara, St. C. & T. Ry. & N. Co. 38
Northern Mich. Trans. Co 38
Northwestern Steam Boiler & Mfg. Co 42

Otis Steel Co..... 3

Parker Bros. Co 48
Pawling & Harnischfeger..... 42
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Red Star Line..... 39
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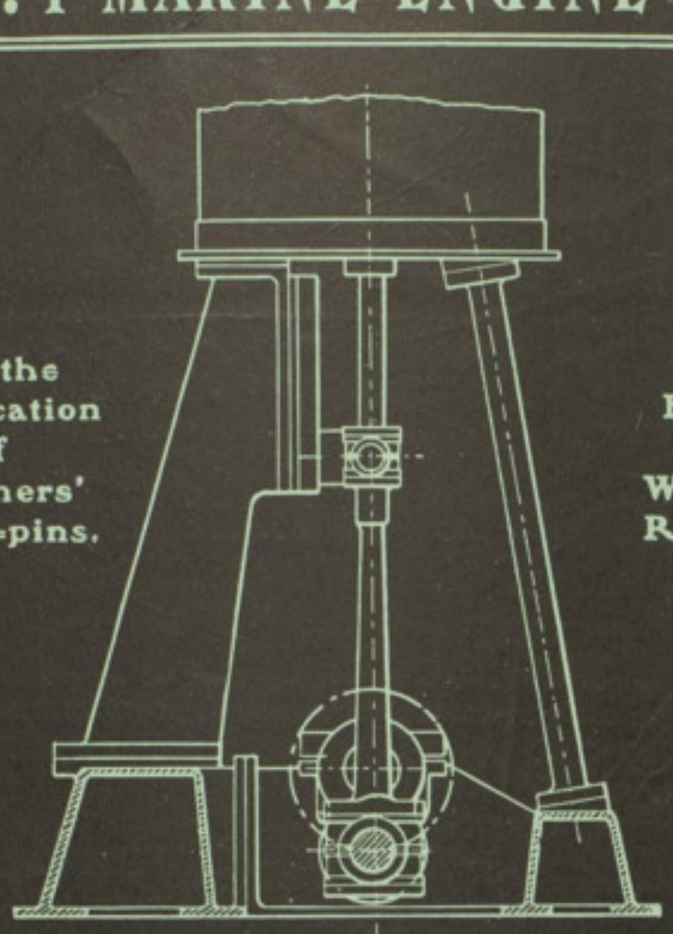

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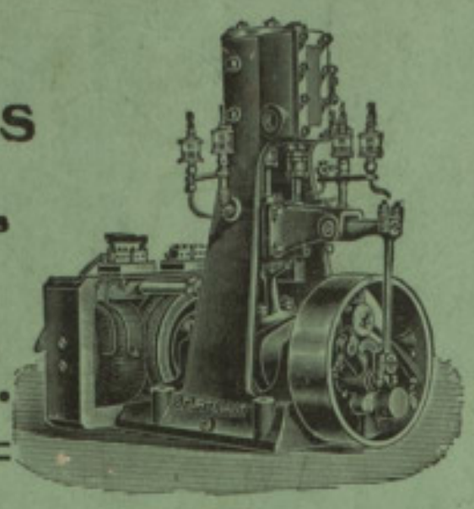

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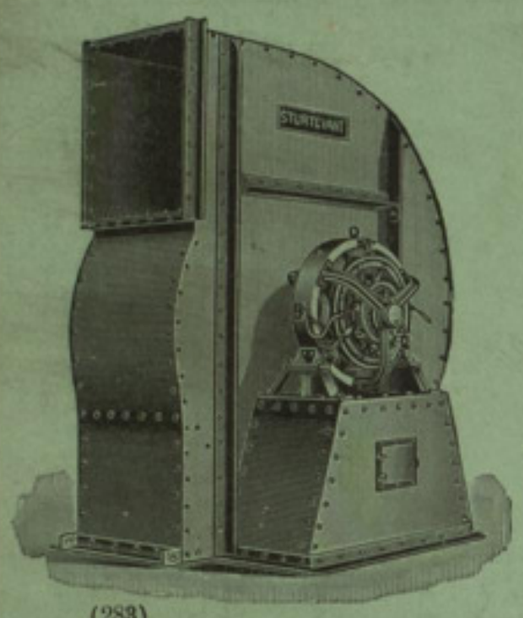

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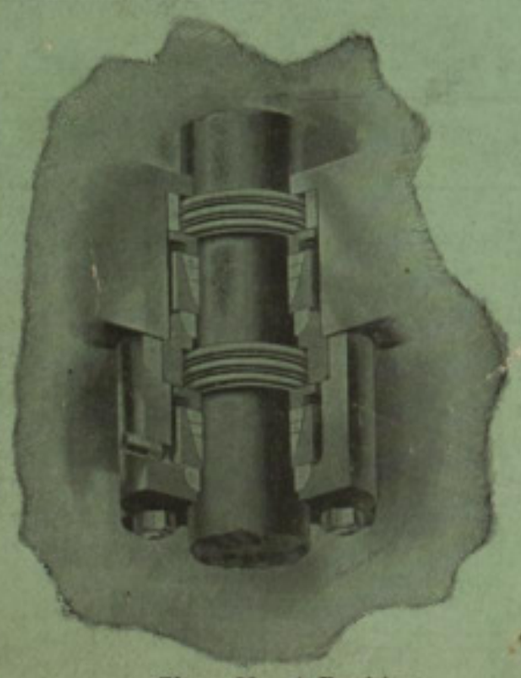

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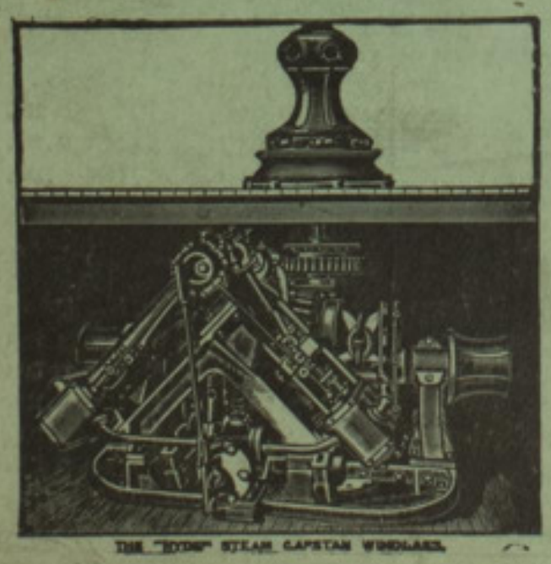

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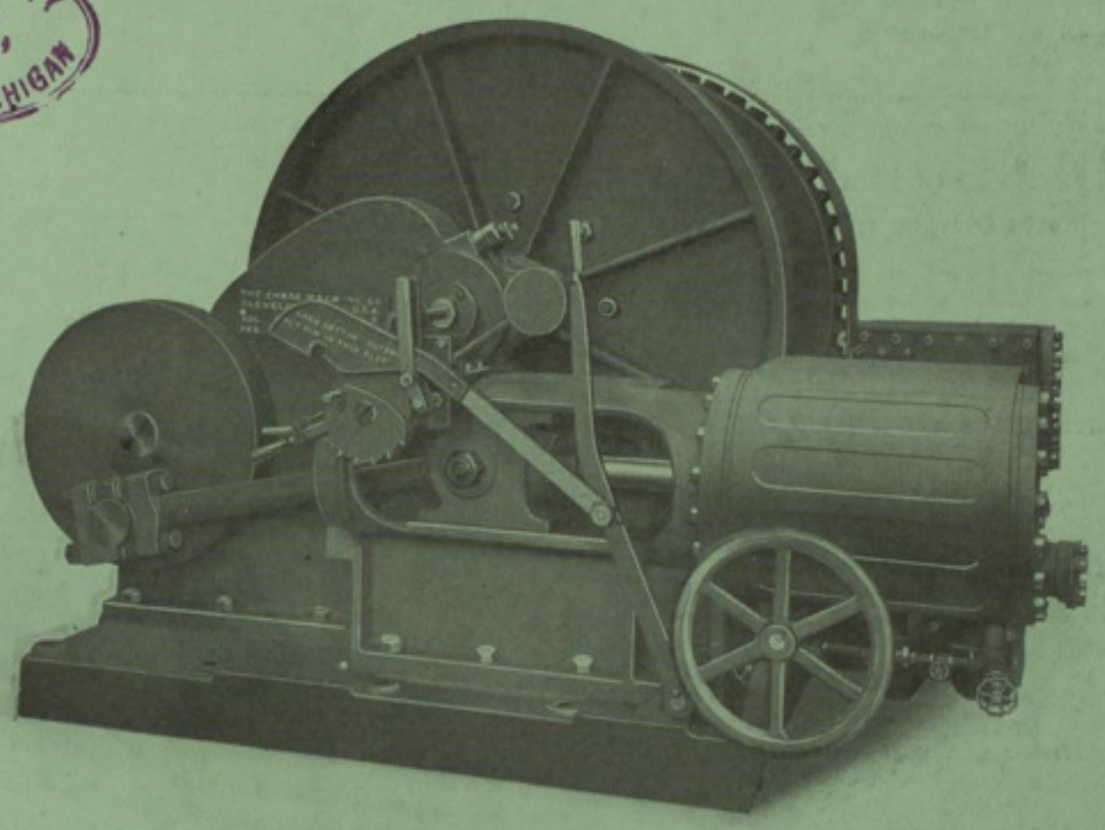
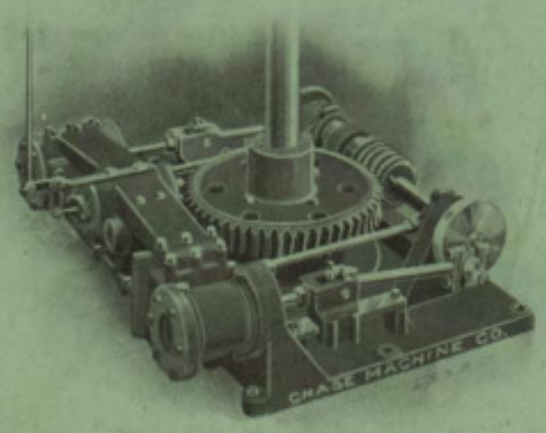


FIGURE 222



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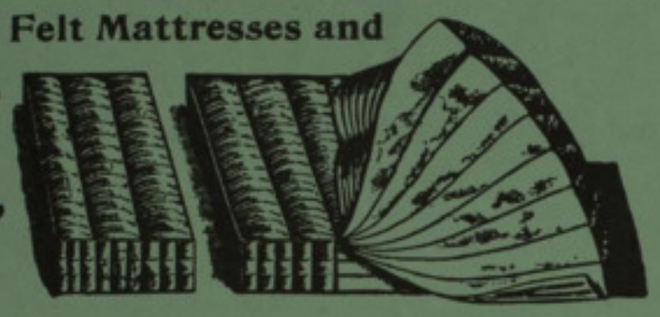

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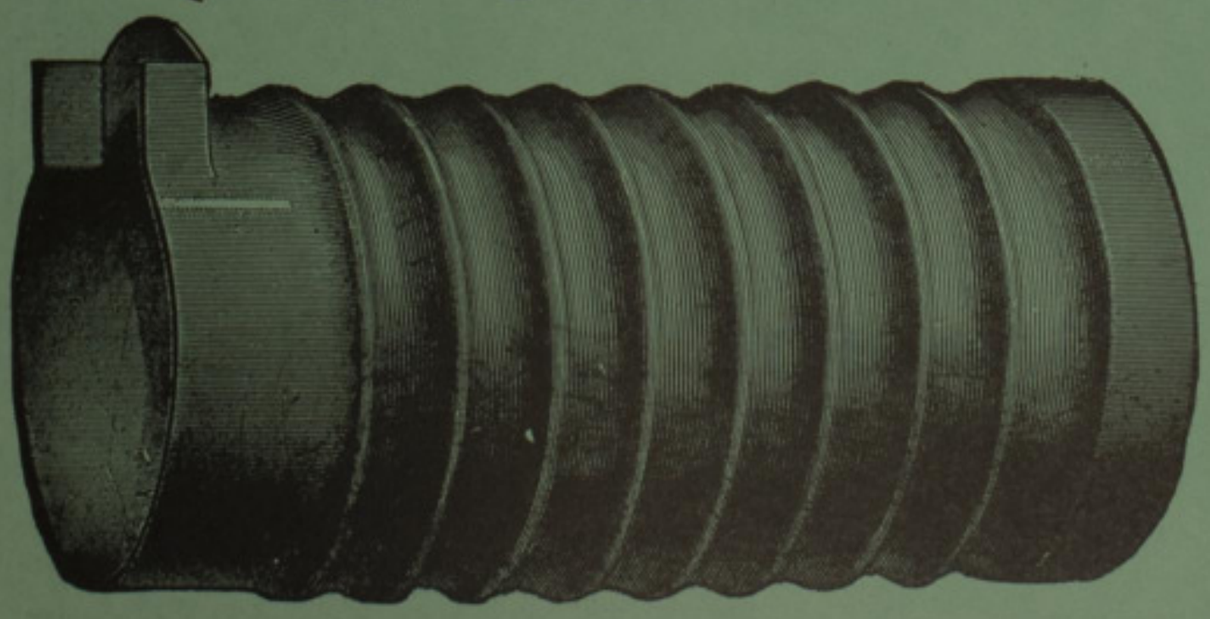

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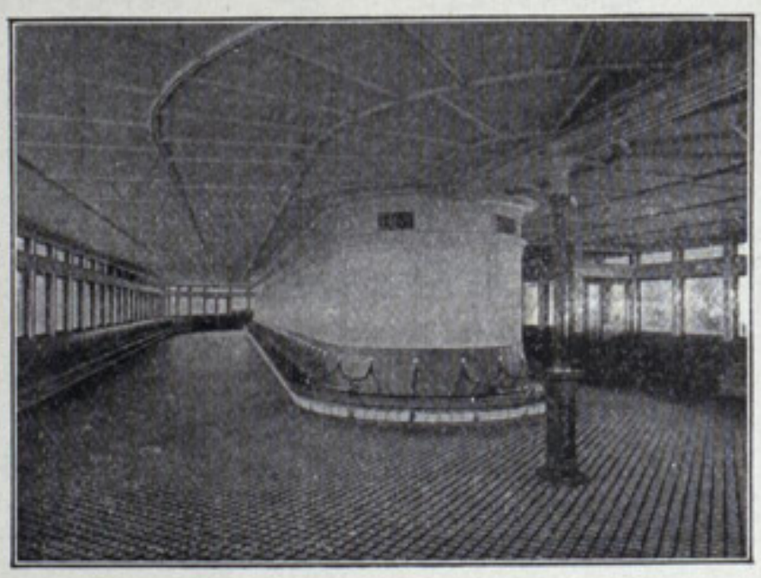

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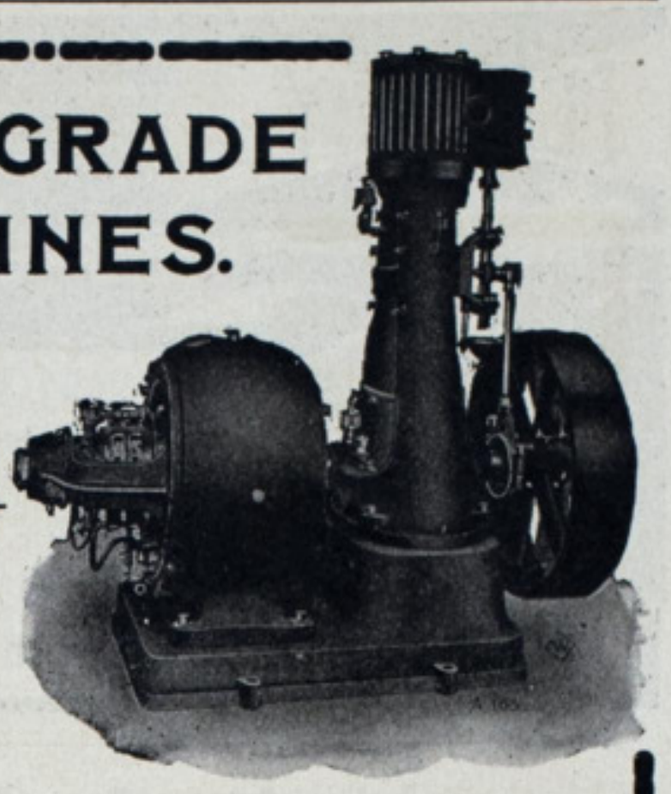

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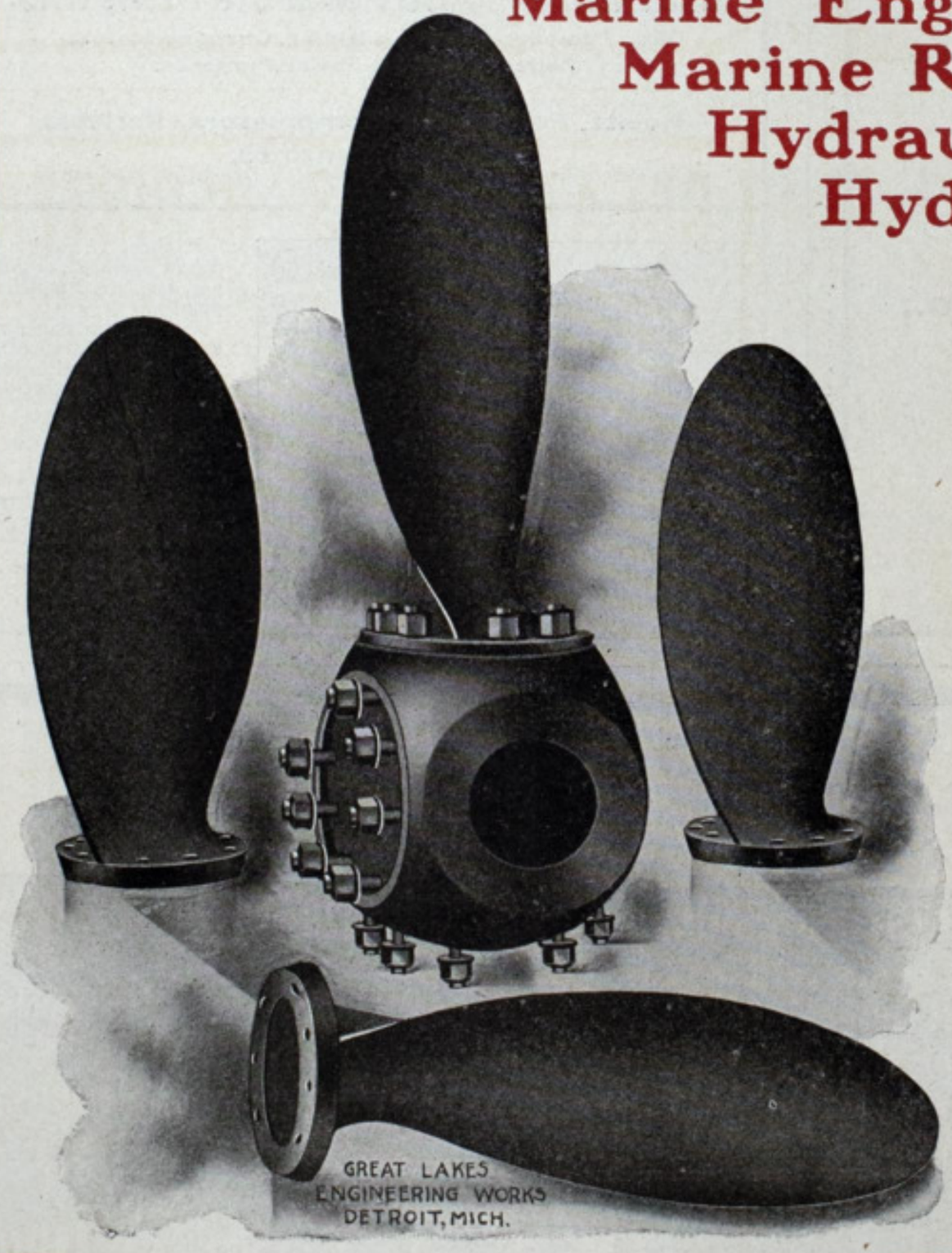

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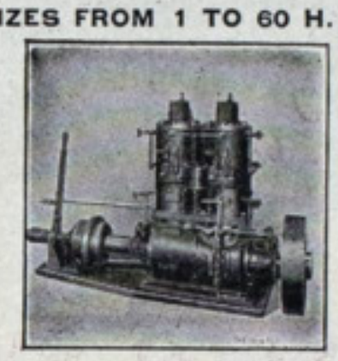

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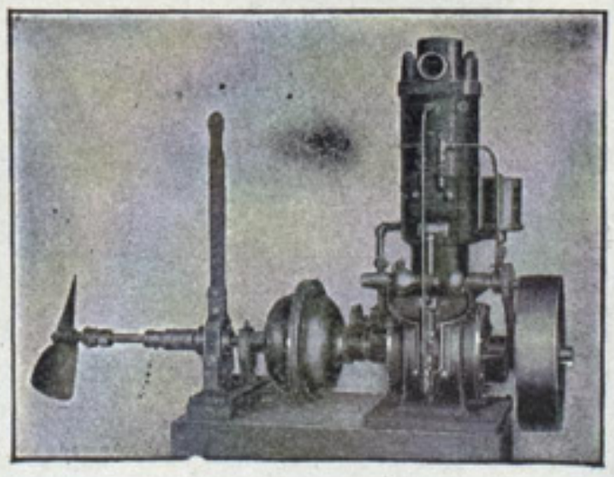

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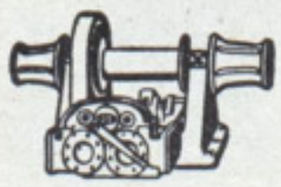

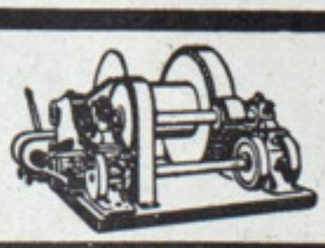

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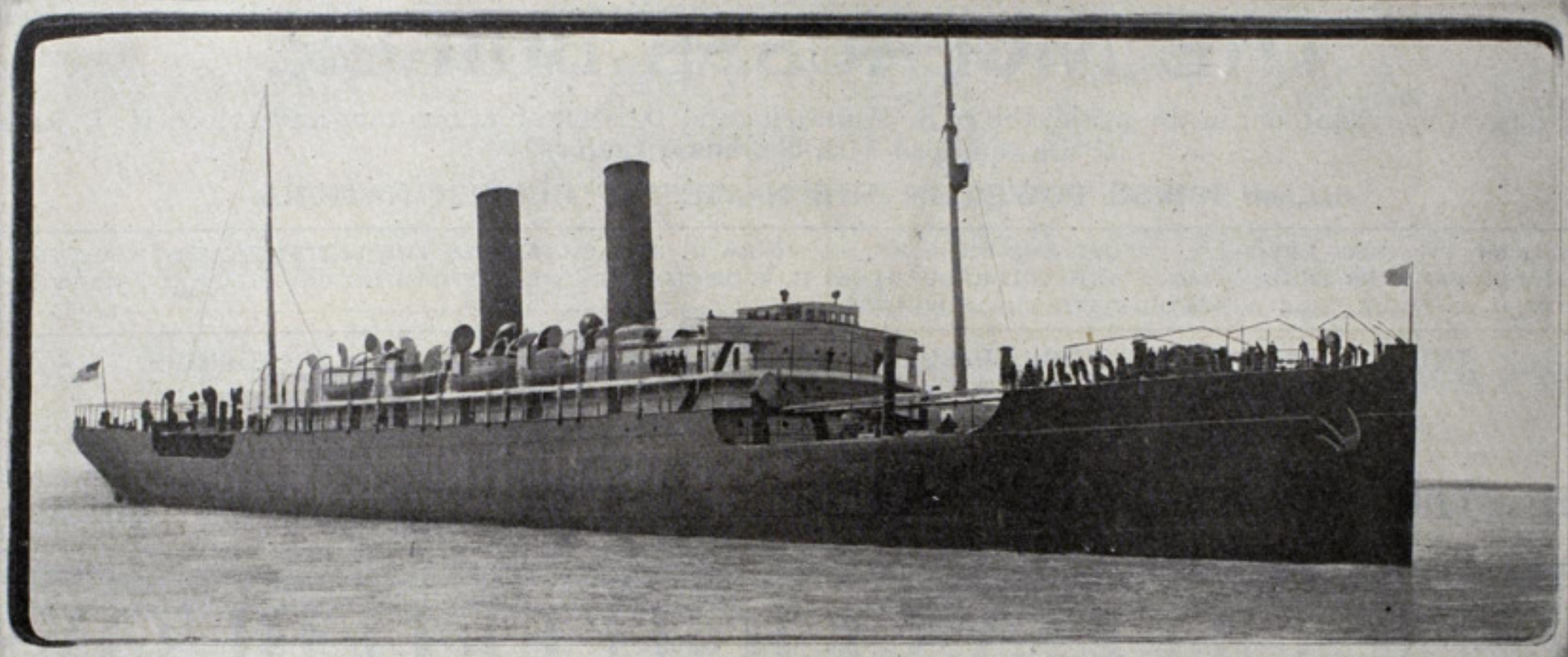

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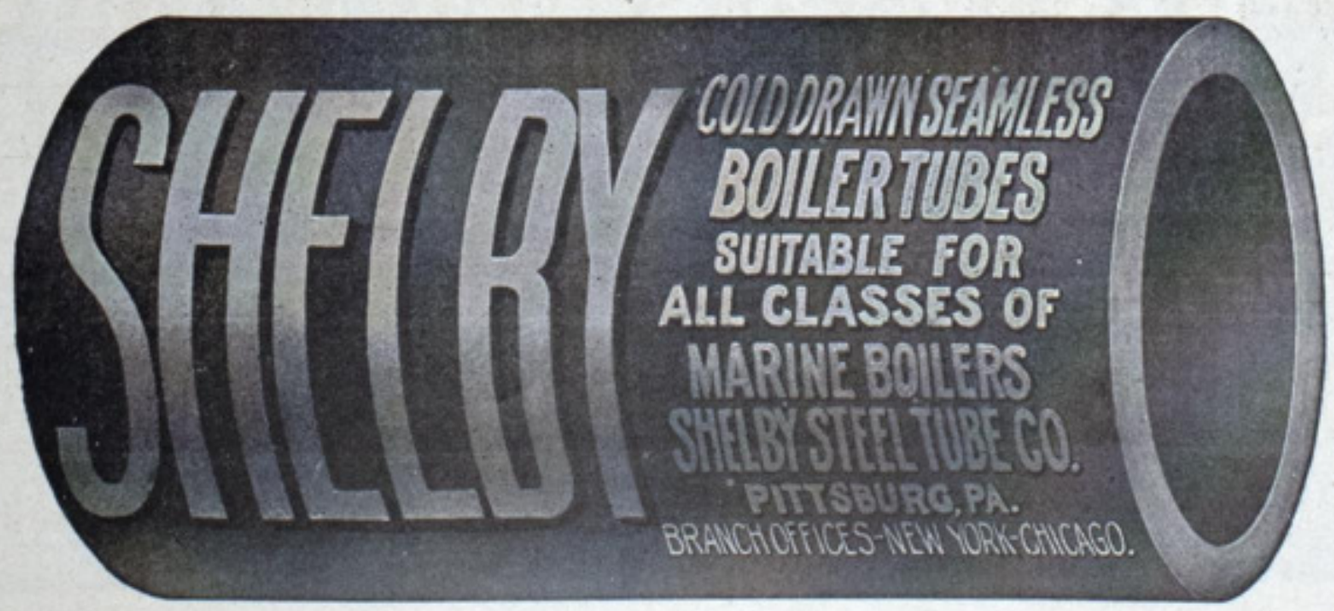

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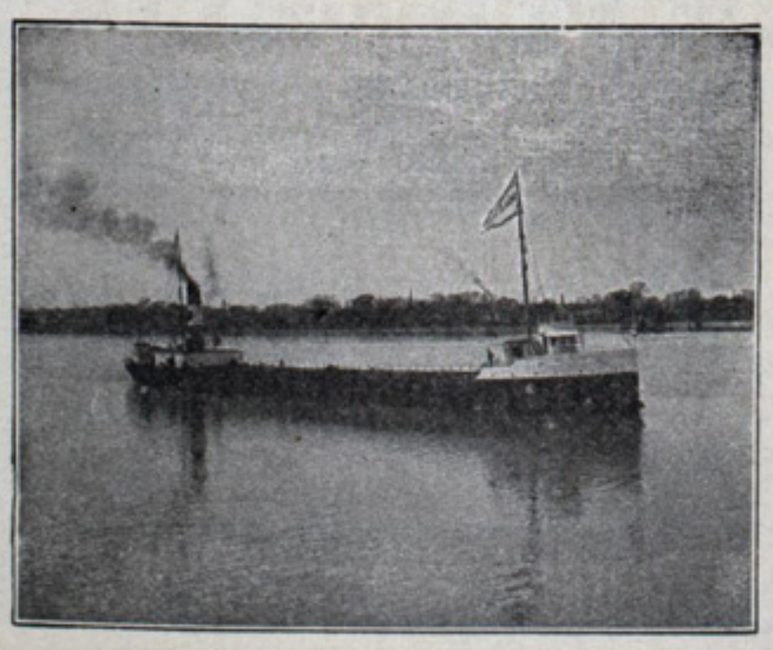

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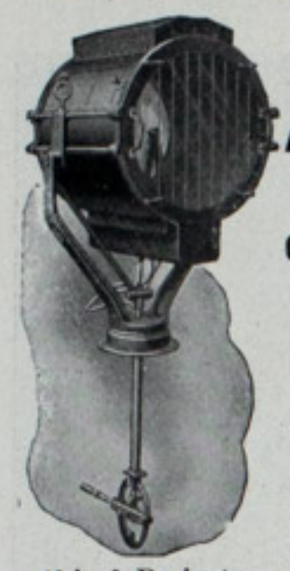

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